



SEQUENCE LISTING

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<120> NOVEL HCV NON-STRUCTURAL POLYPEPTIDE

<130> PP01617.002

<140> US 09/721,479

<141> 2000-11-22

<160> 19

<170> PatentIn Ver. 2.0

<210> 1

<211> 9620

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1990)..(7302)

<220>

<223> Description of Artificial Sequence: Hepatitis C pns345

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Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys
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Pro	Pro	Gly	Ser	Val	Thr	Val	Pro	His	Pro	Asn	Ile	Glu	Glu	Val	Ala		
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ctg	tcc	acc	acc	gga	gag	atc	cct	ttt	tac	ggc	aag	gct	atc	ccc	ctc	2415	
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Lys	Cys	Asp	Glu	Leu	Ala	Ala	Lys	Leu	Val	Ala	Leu	Gly	Ile	Asn	Ala		
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Val	Ala	Tyr	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val	Ile	Pro	Thr	Ser	Gly		
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gac	ttc	gac	tcg	gtg	ata	gac	tgc	aat	acg	tgt	gtc	acc	cag	aca	gtc	2655	
Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	Val	Thr	Gln	Thr	Val		
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Asp	Phe	Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Ile	Thr	Leu	Pro		
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Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	Arg	Thr	Gly	Arg	Gly		
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Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	Glu	Arg	Pro	Ser	Gly		
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gag ggc gtc ttt aca ggc ctc	act cat ata gat gcc cac	ttt cta tcc	2991																	
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320	325	330																		
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Gln Thr Lys Gln Ser Gly Glu	Asn Leu Pro Tyr Leu Val	Ala Tyr Gln																		
335	340	345	350																	
gcc acc gtg tgc gct agg gct	caa gcc cct ccc cca tcg	tgg gac cag	3087																	
Ala Thr Val Cys Ala Arg Ala	Gln Ala Pro Pro Pro Ser	Trp Asp Gln																		
355	360	365																		
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Met Trp Lys Cys Leu Ile Arg	Leu Lys Pro Thr Leu His	Gly Pro Thr																		
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ccc ctg cta tac aga ctg ggc	gct gtt cag aat gaa atc	acc ctg acg	3183																	
Pro Leu Leu Tyr Arg Leu Gly	Ala Val Gln Asn Glu Ile	Thr Leu Thr																		
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His Pro Val Thr Lys Tyr Ile	Met Thr Cys Met Ser Ala	Asp Leu Glu																		
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Ala Ala Tyr Cys Leu Ser Thr	Gly Cys Val Val Ile Val	Gly Arg Val																		
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Val Leu Ser Gly Lys Pro Ala	Ile Ile Pro Asp Arg Glu	Val Leu Tyr																		
450	455	460																		
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Arg Glu Phe Asp Glu Met Glu	Glu Cys Ser Gln His Leu	Pro Tyr Ile																		
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480	485	490																		
ctc ctg cag acc gcg tcc cgt	cag gca gag gtt atc gcc	cct gct gtc	3519																	
Leu Leu Gln Thr Ala Ser Arg	Gln Ala Glu Val Ile Ala	Pro Ala Val																		
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Gln Thr Asn Trp Gln Lys Leu	Glu Thr Phe Trp Ala Lys	His Met Trp																		
515	520	525																		

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Gly Asn Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr	
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Ser Pro Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly	
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Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly	
675 680 685	
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Arg Leu His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly	
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Pro	Phe	Val	Ser	Cys	Gln	Arg	Gly	Tyr	Lys	Gly	Val	Trp	Arg	Gly	Asp	
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Thr	Pro	Leu	Pro	Ala	Pro	Asn	Tyr	Thr	Phe	Ala	Leu	Trp	Arg	Val	Ser	
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Ala	Glu	Glu	Tyr	Val	Glu	Ile	Arg	Gln	Val	Gly	Asp	Phe	His	Tyr	Val	
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Leu	His	Glu	Tyr	Pro	Val	Gly	Ser	Gln	Leu	Pro	Cys	Glu	Pro	Glu	Pro	
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Asp	Val	Ala	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	Pro	Ser	His	Ile	Thr	
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Ala	Glu	Ala	Ala	Gly	Arg	Arg	Leu	Ala	Arg	Gly	Ser	Pro	Pro	Ser	Val	
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gcc	agc	tcc	tcg	gct	agc	cag	cta	tcc	gct	cca	tct	ctc	aag	gca	act	4911
Ala	Ser	Ser	Ser	Ala	Ser	Gln	Leu	Ser	Ala	Pro	Ser	Leu	Lys	Ala	Thr	
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Cys	Thr	Ala	Asn	His	Asp	Ser	Pro	Asp	Ala	Glu	Leu	Ile	Glu	Ala	Asn	

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Glu Asp Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser				
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Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn				
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Pro Pro Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val				
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Val His Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro				
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Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr				
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Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Ser Thr Ser				
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Gly Ile Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser				
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Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro				
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Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser				
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Thr Val Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met				
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Ser Tyr Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu				
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Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His				
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Asn Leu Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys	
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Val Leu Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu	
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Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val	
1345 1350 1355	
gtt aca aag ctc ccc ttg gcc gtg atg gga agc tcc tac gga ttc caa	6111
Val Thr Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln	
1360 1365 1370	
tac tca cca gga cag cgg gtt gaa ttc ctc gtg caa gcg tgg aag tcc	6159
Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser	
1375 1380 1385 1390	
aag aaa acc cca atg ggg ttc tcg tat gat acc cgc tgc ttt gac tcc	6207
Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser	
1395 1400 1405	
aca gtc act gag agc gac atc cgt acg gag gag gca atc tac caa tgt	6255
Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys	
1410 1415 1420	
tgt gac ctc gac ccc caa gcc cgc gtg gcc atc aag tcc ctc acc gag	6303
Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu	
1425 1430 1435	
agg ctt tat gtt ggg ggc cct ctt acc aat tca agg ggg gag aac tgc	6351

Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys	
1440 1445 1450	
ggc tat cgc agg tgc cgc gcg agc ggc gta ctg aca act agc tgt ggt	6399
Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly	
1455 1460 1465 1470	
aac acc ctc act tgc tac atc aag gcc cgg gca gcc tgt cga gcc gca	6447
Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala	
1475 1480 1485	
ggg ctc cag gac tgc acc atg ctc gtg tgt ggc gac gac tta gtc gtt	6495
Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val	
1490 1495 1500	
atc tgt gaa agc gcg ggg gtc cag gag gac gcg gcg agc ctg aga gcc	6543
Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala	
1505 1510 1515	
ttc acg gag gct atg acc agg tac tcc gcc ccc cct ggg gac ccc cca	6591
Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro	
1520 1525 1530	
caa cca gaa tac gac ttg gag ctc ata aca tca tgc tcc tcc aac gtg	6639
Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val	
1535 1540 1545 1550	
tca gtc gcc cac gac ggc gct gga aag agg gtc tac tac ctc acc cgt	6687
Ser Val Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg	
1555 1560 1565	
gac cct aca acc ccc ctc gcg aga gct gcg tgg gag aca gca aga cac	6735
Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His	
1570 1575 1580	
act cca gtc aat tcc tgg cta ggc aac ata atc atg ttt gcc ccc aca	6783
Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr	
1585 1590 1595	
ctg tgg gcg agg atg ata ctg atg acc cat ttc ttt agc gtc ctt ata	6831
Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile	
1600 1605 1610	
gcc agg gac cag ctt gaa cag gcc ctc gat tgc gag atc tac ggg gcc	6879
Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala	
1615 1620 1625 1630	
tgc tac tcc ata gaa cca ctg gat cta cct cca atc att caa aga ctc	6927
Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu	
1635 1640 1645	
cat ggc ctc agc gca ttt tca ctc cac agt tac tct cca ggt gaa atc	6975
His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile	
1650 1655 1660	
aat agg gtg gcc gca tgc ctc aga aaa ctt ggg gta ccg ccc ttg cga	7023
Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg	

1665	1670	1675	
gct tgg aga cac cgg gcc cgg agc gtc cgc gct agg ctt ctg gcc aga			7071
Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg			
1680	1685	1690	
gga ggc agg gct gcc ata tgt ggc aag tac ctc ttc aac tgg gca gta			7119
Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val			
1695	1700	1705	1710
aga aca aag ctc aaa ctc act cca ata gcg gcc gct ggc cag ctg gac			7167
Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp			
	1715	1720	1725
ttg tcc ggc tgg ttc acg gct ggc tac agc ggg gga gac att tat cac			7215
Leu Ser Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His			
	1730	1735	1740
agc gtg tct cat gcc cgg ccc cgc tgg atc tgg ttt tgc cta ctc ctg			7263
Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu			
	1745	1750	1755
ctt gct gca ggg gta ggc atc tac ctc ctc ccc aac cga tgaaggttg			7312
Leu Ala Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg			
1760	1765	1770	
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atccactacg cgtagagct cgctgatcag cctcgactgt gccttctagt tgccagccat			7432
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tgggtggccta actacggcta cactagaagg acagtatttg gtatctgcgc tctgctgaag			8272

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<210> 2
 <211> 1771
 <212> PRT
 <213> Hepatitis C virus

<220>
 <223> Description of Artificial Sequence: Hepatitis C pns345

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 Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
 35 40 45
 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 50 55 60
 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 65 70 75 80
 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
 85 90 95
 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
 100 105 110
 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
 115 120 125
 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
 130 135 140
 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
 145 150 155 160
 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
 165 170 175
 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
 180 185 190
 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
 195 200 205
 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
 210 215 220
 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
 225 230 235 240
 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
 245 250 255
 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
 260 265 270
 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
 275 280 285
 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
 290 295 300
 Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly

305		310		315		320
Val Phe Thr Gly	Leu Thr His Ile Asp	Ala His Phe Leu Ser	Gln Thr			
	325	330	335			
Lys Gln Ser Gly	Glu Asn Leu Pro Tyr	Leu Val Ala Tyr	Gln Ala Thr			
	340	345	350			
Val Cys Ala Arg	Ala Gln Ala Pro Pro Pro	Ser Trp Asp	Gln Met Trp			
	355	360	365			
Lys Cys Leu Ile	Arg Leu Lys Pro Thr	Leu His Gly	Pro Thr Pro Leu			
	370	375	380			
Leu Tyr Arg Leu	Gly Ala Val Gln Asn	Glu Ile Thr	Leu Thr His Pro			
	385	390	395	400		
Val Thr Lys Tyr	Ile Met Thr Cys Met	Ser Ala Asp	Leu Glu Val Val			
	405	410	415			
Thr Ser Thr Trp	Val Leu Val Gly Gly	Val Leu Ala Ala	Leu Ala Ala			
	420	425	430			
Tyr Cys Leu Ser	Thr Gly Cys Val Val	Ile Val Gly	Arg Val Val Leu			
	435	440	445			
Ser Gly Lys Pro	Ala Ile Ile Pro Asp	Arg Glu Val	Leu Tyr Arg Glu			
	450	455	460			
Phe Asp Glu Met	Glu Glu Cys Ser Gln	His Leu Pro Tyr	Ile Glu Gln			
	465	470	475	480		
Gly Met Met Leu	Ala Glu Gln Phe Lys	Gln Lys Ala Leu	Gly Leu Leu			
	485	490	495			
Gln Thr Ala Ser	Arg Gln Ala Glu Val	Ile Ala Pro Ala	Val Gln Thr			
	500	505	510			
Asn Trp Gln Lys	Leu Glu Thr Phe Trp	Ala Lys His Met	Trp Asn Phe			
	515	520	525			
Ile Ser Gly Ile	Gln Tyr Leu Ala Gly	Leu Ser Thr	Leu Pro Gly Asn			
	530	535	540			
Pro Ala Ile Ala	Ser Leu Met Ala Phe	Thr Ala Ala Val	Thr Ser Pro			
	545	550	555	560		
Leu Thr Thr Ser	Gln Thr Leu Leu Phe	Asn Ile Leu Gly	Gly Trp Val			
	565	570	575			
Ala Ala Gln Leu	Ala Ala Pro Gly	Ala Ala Thr Ala	Phe Val Gly Ala			
	580	585	590			
Gly Leu Ala Gly	Ala Ala Ile Gly	Ser Val Gly	Leu Gly Lys Val Leu			
	595	600	605			
Ile Asp Ile Leu	Ala Gly Tyr Gly	Ala Gly Val Ala	Gly Ala Leu Val			

610 615 620
 Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val
 625 630 635 640
 Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val
 645 650 655
 Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
 660 665 670
 Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
 675 680 685
 Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val
 690 695 700
 Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu
 705 710 715 720
 His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp
 725 730 735
 Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys
 740 745 750
 Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe
 755 760 765
 Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile
 770 775 780
 Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys
 785 790 795 800
 Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp
 805 810 815
 Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro
 820 825 830
 Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu
 835 840 845
 Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly
 850 855 860
 Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
 865 870 875 880
 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
 885 890 895
 Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His
 900 905 910
 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val

915	920	925
Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu 930 935 940		
Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser 945 950 955 960		
Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr 965 970 975		
Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu 980 985 990		
Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn 995 1000 1005		
Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp 1010 1015 1020		
Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg 1025 1030 1035 1040		
Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro 1045 1050 1055		
Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His 1060 1065 1070		
Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Pro Arg 1075 1080 1085		
Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu 1090 1095 1100		
Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Ser Thr Ser Gly Ile 1105 1110 1115 1120		
Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys 1125 1130 1135		
Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu 1140 1145 1150		
Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val 1155 1160 1165		
Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr 1170 1175 1180		
Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys 1185 1190 1195 1200		
Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu 1205 1210 1215		

Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys Lys Val
 1220 1225 1230
 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu
 1235 1240 1245
 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser
 1250 1255 1260
 Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys
 1265 1270 1275 1280
 Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val
 1285 1290 1295
 Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr
 1300 1305 1310
 Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln
 1315 1320 1325
 Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp
 1330 1335 1340
 Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr
 1345 1350 1355 1360
 Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser
 1365 1370 1375
 Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys
 1380 1385 1390
 Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val
 1395 1400 1405
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 1410 1415 1420
 Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
 1425 1430 1435 1440
 Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
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 Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr
 1460 1465 1470
 Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
 1475 1480 1485
 Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys
 1490 1495 1500
 Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr
 1505 1510 1515 1520

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Glu	Tyr	Asp	Leu	Glu	Leu	Ile	Thr	Ser	Cys	Ser	Ser	Asn	Val	Ser	Val	1540	1545	1550	
Ala	His	Asp	Gly	Ala	Gly	Lys	Arg	Val	Tyr	Tyr	Leu	Thr	Arg	Asp	Pro	1555	1560	1565	
Thr	Thr	Pro	Leu	Ala	Arg	Ala	Ala	Trp	Glu	Thr	Ala	Arg	His	Thr	Pro	1570	1575	1580	
Val	Asn	Ser	Trp	Leu	Gly	Asn	Ile	Ile	Met	Phe	Ala	Pro	Thr	Leu	Trp	1585	1590	1595	1600
Ala	Arg	Met	Ile	Leu	Met	Thr	His	Phe	Phe	Ser	Val	Leu	Ile	Ala	Arg	1605	1610	1615	
Asp	Gln	Leu	Glu	Gln	Ala	Leu	Asp	Cys	Glu	Ile	Tyr	Gly	Ala	Cys	Tyr	1620	1625	1630	
Ser	Ile	Glu	Pro	Leu	Asp	Leu	Pro	Pro	Ile	Ile	Gln	Arg	Leu	His	Gly	1635	1640	1645	
Leu	Ser	Ala	Phe	Ser	Leu	His	Ser	Tyr	Ser	Pro	Gly	Glu	Ile	Asn	Arg	1650	1655	1660	
Val	Ala	Ala	Cys	Leu	Arg	Lys	Leu	Gly	Val	Pro	Pro	Leu	Arg	Ala	Trp	1665	1670	1675	1680
Arg	His	Arg	Ala	Arg	Ser	Val	Arg	Ala	Arg	Leu	Leu	Ala	Arg	Gly	Gly	1685	1690	1695	
Arg	Ala	Ala	Ile	Cys	Gly	Lys	Tyr	Leu	Phe	Asn	Trp	Ala	Val	Arg	Thr	1700	1705	1710	
Lys	Leu	Lys	Leu	Thr	Pro	Ile	Ala	Ala	Ala	Gly	Gln	Leu	Asp	Leu	Ser	1715	1720	1725	
Gly	Trp	Phe	Thr	Ala	Gly	Tyr	Ser	Gly	Gly	Asp	Ile	Tyr	His	Ser	Val	1730	1735	1740	
Ser	His	Ala	Arg	Pro	Arg	Trp	Ile	Trp	Phe	Cys	Leu	Leu	Leu	Leu	Ala	1745	1750	1755	1760
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<210> 3
 <211> 9620
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> CDS
 <222> (1990)..(7302)

<220>

<223> Description of Artificial Sequence: pDeltaNS3NS5

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 Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu
 1 5 10
 aac ccc tct gtt gct gca aca ctg ggc ttt ggt gct tac atg tcc aag 2079
 Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys
 15 20 25 30
 gct cat ggg atc gat cct aac atc agg acc ggg gtg aga aca att acc 2127
 Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr
 35 40 45
 act ggc agc ccc atc acg tac tcc acc tac ggc aag ttc ctt gcc gac 2175
 Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp
 50 55 60
 ggc ggg tgc tcg ggg ggc gct tat gac ata ata att tgt gac gag tgc 2223
 Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys
 65 70 75
 cac tcc acg gat gcc aca tcc atc ttg ggc att ggc act gtc ctt gac 2271
 His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp
 80 85 90
 caa gca gag act gcg ggg gcg aga ctg gtt gtg ctc gcc acc gcc acc 2319
 Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr
 95 100 105 110
 cct ccg ggc tcc gtc act gtg ccc cat ccc aac atc gag gag gtt gct 2367
 Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala
 115 120 125
 ctg tcc acc acc gga gag atc cct ttt tac ggc aag gct atc ccc ctc 2415
 Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu
 130 135 140
 gaa gta atc aag ggg ggg aga cat ctc atc ttc tgt cat tca aag aag 2463
 Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys
 145 150 155
 aag tgc gac gaa ctc gcc gca aag ctg gtc gca ttg ggc atc aat gcc 2511
 Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala
 160 165 170
 gtg gcc tac tac cgc ggt ctt gac gtg tcc gtc atc ccg acc agc ggc 2559

Val	Ala	Tyr	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val	Ile	Pro	Thr	Ser	Gly	
175					180					185					190	
gat	gtt	gtc	gtc	gtg	gca	acc	gat	gcc	ctc	atg	acc	ggc	tat	acc	ggc	2607
Asp	Val	Val	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	Thr	Gly	Tyr	Thr	Gly	
				195					200					205		
gac	ttc	gac	tcg	gtg	ata	gac	tgc	aat	acg	tgt	gtc	acc	cag	aca	gtc	2655
Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	Val	Thr	Gln	Thr	Val	
			210					215					220			
gat	ttc	agc	ctt	gac	cct	acc	ttc	acc	att	gag	aca	atc	acg	ctc	ccc	2703
Asp	Phe	Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Ile	Thr	Leu	Pro	
		225					230					235				
caa	gat	gct	gtc	tcc	cgc	act	caa	cgt	cgg	ggc	agg	act	ggc	agg	ggg	2751
Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	Arg	Thr	Gly	Arg	Gly	
	240					245					250					
aag	cca	ggc	atc	tac	aga	ttt	gtg	gca	ccg	ggg	gag	cgc	ccc	tcc	ggc	2799
Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	Glu	Arg	Pro	Ser	Gly	
255					260					265					270	
atg	ttc	gac	tcg	tcc	gtc	ctc	tgt	gag	tgc	tat	gac	gca	ggc	tgt	gct	2847
Met	Phe	Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	Gly	Cys	Ala	
				275				280						285		
tgg	tat	gag	ctc	acg	ccc	gcc	gag	act	aca	gtt	agg	cta	cga	gcg	tac	2895
Trp	Tyr	Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	Arg	Leu	Arg	Ala	Tyr	
			290					295					300			
atg	aac	acc	ccg	ggg	ctt	ccc	gtg	tgc	cag	gac	cat	ctt	gaa	ttt	tgg	2943
Met	Asn	Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu	Glu	Phe	Trp	
		305					310					315				
gag	ggc	gtc	ttt	aca	ggc	ctc	act	cat	ata	gat	gcc	cac	ttt	cta	tcc	2991
Glu	Gly	Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	Ala	His	Phe	Leu	Ser	
	320					325					330					
cag	aca	aag	cag	agt	ggg	gag	aac	ctt	cct	tac	ctg	gta	gcg	tac	caa	3039
Gln	Thr	Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr	Leu	Val	Ala	Tyr	Gln	
335					340					345					350	
gcc	acc	gtg	tgc	gct	agg	gct	caa	gcc	cct	ccc	cca	tcg	tgg	gac	cag	3087
Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser	Trp	Asp	Gln	
				355					360					365		
atg	tgg	aag	tgt	ttg	att	cgc	ctc	aag	ccc	acc	ctc	cat	ggg	cca	aca	3135
Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His	Gly	Pro	Thr	
			370					375					380			
ccc	ctg	cta	tac	aga	ctg	ggc	gct	gtt	cag	aat	gaa	atc	acc	ctg	acg	3183
Pro	Leu	Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Ile	Thr	Leu	Thr	
		385					390					395				
cac	cca	gtc	acc	aaa	tac	atc	atg	aca	tgc	atg	tcg	gcc	gac	ctg	gag	3231
His	Pro	Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	Ser	Ala	Asp	Leu	Glu	

400	405	410	
gtc gtc acg agc acc tgg gtg ctc gtt ggc ggc gtc ctg gct gct ttg Val Val Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu 415 420 425 430			3279
gcc gcg tat tgc ctg tca aca ggc tgc gtg gtc ata gtg ggc agg gtc Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg Val 435 440 445			3327
gtc ttg tcc ggg aag ccg gca atc ata cct gac agg gaa gtc ctc tac Val Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr 450 455 460			3375
cga gag ttc gat gag atg gaa gag tgc tct cag cac tta ccg tac atc Arg Glu Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile 465 470 475			3423
gag caa ggg atg atg ctc gcc gag cag ttc aag cag aag gcc ctc ggc Glu Gln Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly 480 485 490			3471
ctc ctg cag acc gcg tcc cgt cag gca gag gtt atc gcc cct gct gtc Leu Leu Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val 495 500 505 510			3519
cag acc aac tgg caa aaa ctc gag acc ttc tgg gcg aag cat atg tgg Gln Thr Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp 515 520 525			3567
aac ttc atc agt ggg ata caa tac ttg gcg ggc ttg tca acg ctg cct Asn Phe Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro 530 535 540			3615
ggt aac ccc gcc att gct tca ttg atg gct ttt aca gct gct gtc acc Gly Asn Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr 545 550 555			3663
agc cca cta acc act agc caa acc ctc ctc ttc aac ata ttg ggg ggg Ser Pro Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly 560 565 570			3711
tgg gtg gct gcc cag ctc gcc gcc ccc ggt gcc gct act gcc ttt gtg Trp Val Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe Val 575 580 585 590			3759
ggc gct ggc tta gct ggc gcc gcc atc ggc agt gtt gga ctg ggg aag Gly Ala Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys 595 600 605			3807
gtc ctc ata gac atc ctt gca ggg tat ggc gcg ggc gtg gcg gga gct Val Leu Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala 610 615 620			3855
ctt gtg gca ttc aag atc atg agc ggt gag gtc ccc tcc acg gag gac Leu Val Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp 625 630 635			3903

ctg gtc aat cta ctg ccc gcc atc ctc tcg ccc gga gcc ctc gta gtc	3951
Leu Val Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val	
640 645 650	
ggc gtg gtc tgt gca gca ata ctg cgc cgg cac gtt ggc ccg ggc gag	3999
Gly Val Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu	
655 660 665 670	
ggg gca gtg cag tgg atg aac cgg ctg ata gcc ttc gcc tcc cgg ggg	4047
Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly	
675 680 685	
aac cat gtt tcc ccc acg cac tac gtg ccg gag agc gat gca gct gcc	4095
Asn His Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala	
690 695 700	
cgc gtc act gcc ata ctc agc agc ctc act gta acc cag ctc ctg agg	4143
Arg Val Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg	
705 710 715	
cga ctg cac cag tgg ata agc tcg gag tgt acc act cca tgc tcc ggt	4191
Arg Leu His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly	
720 725 730	
tcc tgg cta agg gac atc tgg gac tgg ata tgc gag gtg ttg agc gac	4239
Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp	
735 740 745 750	
ttt aag acc tgg cta aaa gct aag ctc atg cca cag ctg cct ggg atc	4287
Phe Lys Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile	
755 760 765	
ccc ttt gtg tcc tgc cag cgc ggg tat aag ggg gtc tgg cga ggg gac	4335
Pro Phe Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp	
770 775 780	
ggc atc atg cac act cgc tgc cac tgt gga gct gag atc act gga cat	4383
Gly Ile Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His	
785 790 795	
gtc aaa aac ggg acg atg agg atc gtc ggt cct agg acc tgc agg aac	4431
Val Lys Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn	
800 805 810	
atg tgg agt ggg acc ttc ccc att aat gcc tac acc acg ggc ccc tgt	4479
Met Trp Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys	
815 820 825 830	
acc ccc ctt cct gcg ccg aac tac acg ttc gcg cta tgg agg gtg tct	4527
Thr Pro Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser	
835 840 845	
gca gag gaa tac gtg gag ata agg cag gtg ggg gac ttc cac tac gtg	4575
Ala Glu Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val	
850 855 860	
acg ggt atg act act gac aat ctt aaa tgc ccg tgc cag gtc cca tcg	4623

Thr	Gly	Met	Thr	Thr	Asp	Asn	Leu	Lys	Cys	Pro	Cys	Gln	Val	Pro	Ser	
		865					870					875				
ccc	gaa	ttt	ttc	aca	gaa	ttg	gac	ggg	gtg	cgc	cta	cat	agg	ttt	gcg	4671
Pro	Glu	Phe	Phe	Thr	Glu	Leu	Asp	Gly	Val	Arg	Leu	His	Arg	Phe	Ala	
	880					885					890					
ccc	ccc	tgc	aag	ccc	ttg	ctg	cgg	gag	gag	gta	tca	ttc	aga	gta	gga	4719
Pro	Pro	Cys	Lys	Pro	Leu	Leu	Arg	Glu	Glu	Val	Ser	Phe	Arg	Val	Gly	
	895				900					905					910	
ctc	cac	gaa	tac	ccg	gta	ggg	tcg	caa	tta	cct	tgc	gag	ccc	gaa	ccg	4767
Leu	His	Glu	Tyr	Pro	Val	Gly	Ser	Gln	Leu	Pro	Cys	Glu	Pro	Glu	Pro	
				915					920					925		
gac	gtg	gcc	gtg	ttg	acg	tcc	atg	ctc	act	gat	ccc	tcc	cat	ata	aca	4815
Asp	Val	Ala	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	Pro	Ser	His	Ile	Thr	
			930					935					940			
gca	gag	gcg	gcc	ggg	cga	agg	ttg	gcg	agg	gga	tca	ccc	ccc	tct	gtg	4863
Ala	Glu	Ala	Ala	Gly	Arg	Arg	Leu	Ala	Arg	Gly	Ser	Pro	Pro	Ser	Val	
	945						950					955				
gcc	agc	tcc	tcg	gct	agc	cag	cta	tcc	gct	cca	tct	ctc	aag	gca	act	4911
Ala	Ser	Ser	Ser	Ala	Ser	Gln	Leu	Ser	Ala	Pro	Ser	Leu	Lys	Ala	Thr	
	960					965				970						
tgc	acc	gct	aac	cat	gac	tcc	cct	gat	gct	gag	ctc	ata	gag	gcc	aac	4959
Cys	Thr	Ala	Asn	His	Asp	Ser	Pro	Asp	Ala	Glu	Leu	Ile	Glu	Ala	Asn	
	975				980					985					990	
ctc	cta	tgg	agg	cag	gag	atg	ggc	ggc	aac	atc	acc	agg	gtt	gag	tca	5007
Leu	Leu	Trp	Arg	Gln	Glu	Met	Gly	Gly	Asn	Ile	Thr	Arg	Val	Glu	Ser	
				995				1000					1005			
gaa	aac	aaa	gtg	gtg	att	ctg	gac	tcc	ttc	gat	ccg	ctt	gtg	gcg	gag	5055
Glu	Asn	Lys	Val	Val	Ile	Leu	Asp	Ser	Phe	Asp	Pro	Leu	Val	Ala	Glu	
		1010						1015				1020				
gag	gac	gag	cgg	gag	atc	tcc	gta	ccc	gca	gaa	atc	ctg	cgg	aag	tct	5103
Glu	Asp	Glu	Arg	Glu	Ile	Ser	Val	Pro	Ala	Glu	Ile	Leu	Arg	Lys	Ser	
	1025					1030					1035					
cgg	aga	ttc	gcc	cag	gcc	ctg	ccc	gtt	tgg	gcg	cgg	ccg	gac	tat	aac	5151
Arg	Arg	Phe	Ala	Gln	Ala	Leu	Pro	Val	Trp	Ala	Arg	Pro	Asp	Tyr	Asn	
	1040				1045					1050						
ccc	ccg	cta	gtg	gag	acg	tgg	aaa	aag	ccc	gac	tac	gaa	cca	cct	gtg	5199
Pro	Pro	Leu	Val	Glu	Thr	Trp	Lys	Lys	Pro	Asp	Tyr	Glu	Pro	Pro	Val	
	1055				1060				1065					1070		
gtc	cat	ggc	tgc	ccg	ctt	cca	cct	cca	aag	tcc	cct	cct	gtg	cct	ccg	5247
Val	His	Gly	Cys	Pro	Leu	Pro	Pro	Pro	Lys	Ser	Pro	Pro	Val	Pro	Pro	
				1075				1080					1085			
cct	cgg	aag	aag	cgg	acg	gtg	gtc	ctc	act	gaa	tca	acc	cta	tct	act	5295
Pro	Arg	Lys	Lys	Arg	Thr	Val	Val	Leu	Thr	Glu	Ser	Thr	Leu	Ser	Thr	

1090	1095	1100	
gcc ttg gcc gag ctc gcc acc aga agc ttt ggc agc tcc tca act tcc			5343
Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Ser Thr Ser			
1105	1110	1115	
ggc att acg ggc gac aat acg aca aca tcc tct gag ccc gcc cct tct			5391
Gly Ile Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser			
1120	1125	1130	
ggc tgc ccc ccc gac tcc gac gct gag tcc tat tcc tcc atg ccc ccc			5439
Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro			
1135	1140	1145	1150
ctg gag ggg gag cct ggg gat ccg gat ctt agc gac ggg tca tgg tca			5487
Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser			
1155	1160	1165	
acg gtc agt agt gag gcc aac gcg gag gat gtc gtg tgc tgc tca atg			5535
Thr Val Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met			
1170	1175	1180	
tct tac tct tgg aca ggc gca ctc gtc acc ccg tgc gcc gcg gaa gaa			5583
Ser Tyr Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu			
1185	1190	1195	
cag aaa ctg ccc atc aat gca cta agc aac tcg ttg cta cgt cac cac			5631
Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His			
1200	1205	1210	
aat ttg gtg tat tcc acc acc tca cgc agt gct tgc caa agg cag aag			5679
Asn Leu Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys			
1215	1220	1225	1230
aaa gtc aca ttt gac aga ctg caa gtt ctg gac agc cat tac cag gac			5727
Lys Val Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp			
1235	1240	1245	
gta ctc aag gag gtt aaa gca gcg gcg tca aaa gtg aag gct aac ttg			5775
Val Leu Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu			
1250	1255	1260	
cta tcc gta gag gaa gct tgc agc ctg acg ccc cca cac tca gcc aaa			5823
Leu Ser Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys			
1265	1270	1275	
tcc aag ttt ggt tat ggg gca aaa gac gtc cgt tgc cat gcc aga aag			5871
Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys			
1280	1285	1290	
gcc gta acc cac atc aac tcc gtg tgg aaa gac ctt ctg gaa gac aat			5919
Ala Val Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn			
1295	1300	1305	1310
gta aca cca ata gac act acc atc atg gct aag aac gag gtt ttc tgc			5967
Val Thr Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys			
1315	1320	1325	

gtt cag cct gag aag ggg ggt cgt aag cca gct cgt ctc atc gtg ttc	6015
Val Gln Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe	
1330 1335 1340	
ccc gat ctg ggc gtg cgc gtg tgc gaa aag atg gct ttg tac gac gtg	6063
Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val	
1345 1350 1355	
gtt aca aag ctc ccc ttg gcc gtg atg gga agc tcc tac gga ttc caa	6111
Val Thr Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln	
1360 1365 1370	
tac tca cca gga cag cgg gtt gaa ttc ctc gtg caa gcg tgg aag tcc	6159
Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser	
1375 1380 1385 1390	
aag aaa acc cca atg ggg ttc tcg tat gat acc cgc tgc ttt gac tcc	6207
Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser	
1395 1400 1405	
aca gtc act gag agc gac atc cgt acg gag gag gca atc tac caa tgt	6255
Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys	
1410 1415 1420	
tgt gac ctc gac ccc caa gcc cgc gtg gcc atc aag tcc ctc acc gag	6303
Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu	
1425 1430 1435	
agg ctt tat gtt ggg ggc cct ctt acc aat tca agg ggg gag aac tgc	6351
Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys	
1440 1445 1450	
ggc tat cgc agg tgc cgc gcg agc ggc gta ctg aca act agc tgt ggt	6399
Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly	
1455 1460 1465 1470	
aac acc ctc act tgc tac atc aag gcc cgg gca gcc tgt cga gcc gca	6447
Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala	
1475 1480 1485	
ggg ctc cag gac tgc acc atg ctc gtg tgt ggc gac gac tta gtc gtt	6495
Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val	
1490 1495 1500	
atc tgt gaa agc gcg ggg gtc cag gag gac gcg gcg agc ctg aga gcc	6543
Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala	
1505 1510 1515	
ttc acg gag gct atg acc agg tac tcc gcc ccc cct ggg gac ccc cca	6591
Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro	
1520 1525 1530	
caa cca gaa tac gac ttg gag ctc ata aca tca tgc tcc tcc aac gtg	6639
Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val	
1535 1540 1545 1550	
tca gtc gcc cac gac ggc gct gga aag agg gtc tac tac ctc acc cgt	6687

Ser Val Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg
 1555 1560 1565
 gac cct aca acc ccc ctc gcg aga gct gcg tgg gag aca gca aga cac 6735
 Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His
 1570 1575 1580
 act cca gtc aat tcc tgg cta ggc aac ata atc atg ttt gcc ccc aca 6783
 Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr
 1585 1590 1595
 ctg tgg gcg agg atg ata ctg atg acc cat ttc ttt agc gtc ctt ata 6831
 Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile
 1600 1605 1610
 gcc agg gac cag ctt gaa cag gcc ctc gat tgc gag atc tac ggg gcc 6879
 Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala
 1615 1620 1625 1630
 tgc tac tcc ata gaa cca ctg gat cta cct cca atc att caa aga ctc 6927
 Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu
 1635 1640 1645
 cat ggc ctc agc gca ttt tca ctc cac agt tac tct cca ggt gaa atc 6975
 His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile
 1650 1655 1660
 aat agg gtg gcc gca tgc ctc aga aaa ctt ggg gta ccg ccc ttg cga 7023
 Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg
 1665 1670 1675
 gct tgg aga cac cgg gcc cgg agc gtc cgc gct agg ctt ctg gcc aga 7071
 Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg
 1680 1685 1690
 gga ggc agg gct gcc ata tgt ggc aag tac ctc ttc aac tgg gca gta 7119
 Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val
 1695 1700 1705 1710
 aga aca aag ctc aaa ctc act cca ata gcg gcc gct ggc cag ctg gac 7167
 Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp
 1715 1720 1725
 ttg tcc ggc tgg ttc acg gct ggc tac agc ggg gga gac att tat cac 7215
 Leu Ser Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His
 1730 1735 1740
 agc gtg tct cat gcc cgg ccc cgc tgg atc tgg ttt tgc cta ctc ctg 7263
 Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu
 1745 1750 1755
 ctt gct gca ggg gta ggc atc tac ctc ctc ccc aac cga tgaaggttg 7312
 Leu Ala Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg
 1760 1765 1770
 ggtaaacact ccggcctaaa aaaaaaaaaa aatctagaaa ggcgcgccaa gatataagg 7372

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<211> 1771
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: pDeltaNS3NS5

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Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
35 40 45
Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
50 55 60
Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
65 70 75 80
Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
85 90 95
Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
100 105 110
Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
115 120 125
Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
130 135 140
Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
145 150 155 160

Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
 165 170 175
 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
 180 185 190
 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
 195 200 205
 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
 210 215 220
 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
 225 230 235 240
 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
 245 250 255
 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
 260 265 270
 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
 275 280 285
 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
 290 295 300
 Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly
 305 310 315 320
 Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr
 325 330 335
 Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr
 340 345 350
 Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp
 355 360 365
 Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu
 370 375 380
 Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile Thr Leu Thr His Pro
 385 390 395 400
 Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala Asp Leu Glu Val Val
 405 410 415
 Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala
 420 425 430
 Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg Val Val Leu
 435 440 445
 Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu
 450 455 460

Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln
465 470 475 480
Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu
485 490 495
Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val Gln Thr
500 505 510
Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe
515 520 525
Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn
530 535 540
Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro
545 550 555 560
Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
565 570 575
Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe Val Gly Ala
580 585 590
Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu
595 600 605
Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val
610 615 620
Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val
625 630 635 640
Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val
645 650 655
Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
660 665 670
Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
675 680 685
Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val
690 695 700
Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu
705 710 715 720
His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp
725 730 735
Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys
740 745 750
Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe
755 760 765

Val	Ser	Cys	Gln	Arg	Gly	Tyr	Lys	Gly	Val	Trp	Arg	Gly	Asp	Gly	Ile	770	775	780	
Met	His	Thr	Arg	Cys	His	Cys	Gly	Ala	Glu	Ile	Thr	Gly	His	Val	Lys	785	790	795	800
Asn	Gly	Thr	Met	Arg	Ile	Val	Gly	Pro	Arg	Thr	Cys	Arg	Asn	Met	Trp	805	810	815	
Ser	Gly	Thr	Phe	Pro	Ile	Asn	Ala	Tyr	Thr	Thr	Gly	Pro	Cys	Thr	Pro	820	825	830	
Leu	Pro	Ala	Pro	Asn	Tyr	Thr	Phe	Ala	Leu	Trp	Arg	Val	Ser	Ala	Glu	835	840	845	
Glu	Tyr	Val	Glu	Ile	Arg	Gln	Val	Gly	Asp	Phe	His	Tyr	Val	Thr	Gly	850	855	860	
Met	Thr	Thr	Asp	Asn	Leu	Lys	Cys	Pro	Cys	Gln	Val	Pro	Ser	Pro	Glu	865	870	875	880
Phe	Phe	Thr	Glu	Leu	Asp	Gly	Val	Arg	Leu	His	Arg	Phe	Ala	Pro	Pro	885	890	895	
Cys	Lys	Pro	Leu	Leu	Arg	Glu	Glu	Val	Ser	Phe	Arg	Val	Gly	Leu	His	900	905	910	
Glu	Tyr	Pro	Val	Gly	Ser	Gln	Leu	Pro	Cys	Glu	Pro	Glu	Pro	Asp	Val	915	920	925	
Ala	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	Pro	Ser	His	Ile	Thr	Ala	Glu	930	935	940	
Ala	Ala	Gly	Arg	Arg	Leu	Ala	Arg	Gly	Ser	Pro	Pro	Ser	Val	Ala	Ser	945	950	955	960
Ser	Ser	Ala	Ser	Gln	Leu	Ser	Ala	Pro	Ser	Leu	Lys	Ala	Thr	Cys	Thr	965	970	975	
Ala	Asn	His	Asp	Ser	Pro	Asp	Ala	Glu	Leu	Ile	Glu	Ala	Asn	Leu	Leu	980	985	990	
Trp	Arg	Gln	Glu	Met	Gly	Gly	Asn	Ile	Thr	Arg	Val	Glu	Ser	Glu	Asn	995	1000	1005	
Lys	Val	Val	Ile	Leu	Asp	Ser	Phe	Asp	Pro	Leu	Val	Ala	Glu	Glu	Asp	1010	1015	1020	
Glu	Arg	Glu	Ile	Ser	Val	Pro	Ala	Glu	Ile	Leu	Arg	Lys	Ser	Arg	Arg	1025	1030	1035	1040
Phe	Ala	Gln	Ala	Leu	Pro	Val	Trp	Ala	Arg	Pro	Asp	Tyr	Asn	Pro	Pro	1045	1050	1055	
Leu	Val	Glu	Thr	Trp	Lys	Lys	Pro	Asp	Tyr	Glu	Pro	Pro	Val	Val	His	1060	1065	1070	

Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Pro Arg
 1075 1080 1085
 Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu
 1090 1095 1100
 Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Ser Thr Ser Gly Ile
 1105 1110 1115 1120
 Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys
 1125 1130 1135
 Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu
 1140 1145 1150
 Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val
 1155 1160 1165
 Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr
 1170 1175 1180
 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys
 1185 1190 1195 1200
 Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu
 1205 1210 1215
 Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys Lys Val
 1220 1225 1230
 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu
 1235 1240 1245
 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser
 1250 1255 1260
 Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys
 1265 1270 1275 1280
 Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val
 1285 1290 1295
 Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr
 1300 1305 1310
 Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln
 1315 1320 1325
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 1330 1335 1340
 Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr
 1345 1350 1355 1360
 Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser
 1365 1370 1375

Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys
 1380 1385 1390
 Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val
 1395 1400 1405
 Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys Cys Asp
 1410 1415 1420
 Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
 1425 1430 1435 1440
 Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
 1445 1450 1455
 Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr
 1460 1465 1470
 Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
 1475 1480 1485
 Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys
 1490 1495 1500
 Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr
 1505 1510 1515 1520
 Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro
 1525 1530 1535
 Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val
 1540 1545 1550
 Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro
 1555 1560 1565
 Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro
 1570 1575 1580
 Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp
 1585 1590 1595 1600
 Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile Ala Arg
 1605 1610 1615
 Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala Cys Tyr
 1620 1625 1630
 Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu His Gly
 1635 1640 1645
 Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg
 1650 1655 1660
 Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp
 1665 1670 1675 1680

Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly
 1685 1690 1695
 Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr
 1700 1705 1710
 Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp Leu Ser
 1715 1720 1725
 Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val
 1730 1735 1740
 Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Leu Ala
 1745 1750 1755 1760
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 1765 1770

<210> 5

<211> 4282

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: pCMVII

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 cgtatcacga ggccctttcg tc 4282

<210> 6
<211> 6299
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: pNS34a

<220>
<221> CDS
<222> (1990)..(4047)

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ggggcggaga atggggcgaa ctggggcggg aggggaattat tggctattgg ccattgcata 360
cgttgtatct atatcataat atgtacattt atattggctc atgtccaata tgaccgcat 420
gttgacattg attattgact agttattaat agtaatcaat tacgggggtca ttagttcata 480
gcccatatat ggagttccgc gttacataac ttacggtaaa tggcccgctt ggctgaccgc 540
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atcaagtgta tcatatgcca agtccgcccc ctattgacgt caatgacggt aaatggccccg 720
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Met Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu
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Glu Gly Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala
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acg tgc atc aat ggg gtg tgc tgg act gtc tac cac ggg gcc gga acg 2175
Thr Cys Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr
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agg acc atc gcg tca ccc aag ggt cct gtc atc cag atg tat acc aat 2223
Arg Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn
65 70 75

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Val Asp Gln Asp Leu Val Gly Trp Pro Ala Ser Gln Gly Thr Arg Ser
80 85 90

ttg aca ccc tgc act tgc ggc tcc tcg gac ctt tac ctg gtc acg agg 2319
Leu Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg
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cac gcc gat gtc att ccc gtg cgc cgg cgg ggt gat agc agg ggc agc 2367
His Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser
115 120 125

ctg ctg tcg ccc cgg ccc att tcc tac ttg aaa ggc tcc tcg ggg ggt 2415
Leu Leu Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly
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ccg ctg ttg tgc ccc gcg ggg cac gcc gtg ggc ata ttt agg gcc gcg	2463
Pro Leu Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala	
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Val Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu	
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aac cta gag aca acc atg agg tcc ccg gtg ttc acg gat aac tcc tct	2559
Asn Leu Glu Thr Thr Met Arg Ser Pro Val Phe Thr Asp Asn Ser Ser	
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cca cca gta gtg ccc cag agc ttc cag gtg gct cac ctc cat gct ccc	2607
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Thr Gly Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln	
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Gly Tyr Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly	
225 230 235	
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Phe Gly Ala Tyr Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg	
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Tyr Gly Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp	
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Ile Ile Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu	
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Val Val Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His	
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Pro Asn Ile Glu Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe	
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Tyr Gly Lys Ala Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu	
355 360 365	
atc ttc tgt cat tca aag aag aag tgc gac gaa ctc gcc gca aag ctg	3135

Ile	Phe	Cys	His	Ser	Lys	Lys	Lys	Cys	Asp	Glu	Leu	Ala	Ala	Lys	Leu		
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Val	Ala	Leu	Gly	Ile	Asn	Ala	Val	Ala	Tyr	Tyr	Arg	Gly	Leu	Asp	Val		
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tcc	gtc	atc	ccg	acc	agc	ggc	gat	gtt	gtc	gtc	gtg	gca	acc	gat	gcc	3231	
Ser	Val	Ile	Pro	Thr	Ser	Gly	Asp	Val	Val	Val	Val	Ala	Thr	Asp	Ala		
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ctc	atg	acc	ggc	tat	acc	ggc	gac	ttc	gac	tcg	gtg	ata	gac	tgc	aat	3279	
Leu	Met	Thr	Gly	Tyr	Thr	Gly	Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn		
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Thr	Cys	Val	Thr	Gln	Thr	Val	Asp	Phe	Ser	Leu	Asp	Pro	Thr	Phe	Thr		
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Arg	Gly	Arg	Thr	Gly	Arg	Gly	Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala		
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Cys	Tyr	Asp	Ala	Gly	Cys	Ala	Trp	Tyr	Glu	Leu	Thr	Pro	Ala	Glu	Thr		
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Gln	Asp	His	Leu	Glu	Phe	Trp	Glu	Gly	Val	Phe	Thr	Gly	Leu	Thr	His		
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Pro	Tyr	Leu	Val	Ala	Tyr	Gln	Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala		
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Pro	Pro	Pro	Ser	Trp	Asp	Gln	Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys		
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Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys			
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Val Val Ile Val Gly Arg Val Val Leu Ser Gly Lys Pro Ala Ile Ile			
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cct gac agg gaa gtc ctc tac cga gag ttc gat gag atg gaa gag tgc			4047
Pro Asp Arg Glu Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu Cys			
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<211> 686

<212> PRT

<213> Artificial Sequence

<220>

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 50 55 60
 Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp
 65 70 75 80
 Gln Asp Leu Val Gly Trp Pro Ala Ser Gln Gly Thr Arg Ser Leu Thr
 85 90 95
 Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala
 100 105 110
 Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu
 115 120 125
 Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu
 130 135 140
 Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys
 145 150 155 160
 Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Asn Leu
 165 170 175
 Glu Thr Thr Met Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro
 180 185 190
 Val Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly
 195 200 205
 Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr
 210 215 220
 Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly
 225 230 235 240
 Ala Tyr Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly
 245 250 255
 Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly
 260 265 270
 Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile
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 Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile
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 Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val
 310 315 320
 r Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn

325								330				335			
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Lys	Ala	Ile	Pro	Leu	Glu	Val	Ile	Lys	Gly	Gly	Arg	His	Leu	Ile	Phe
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Cys	His	Ser	Lys	Lys	Lys	Cys	Asp	Glu	Leu	Ala	Ala	Lys	Leu	Val	Ala
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Thr	Gly	Tyr	Thr	Gly	Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys
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Val	Thr	Gln	Thr	Val	Asp	Phe	Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu
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His	Leu	Glu	Phe	Trp	Glu	Gly	Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp
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Ala	His	Phe	Leu	Ser	Gln	Thr	Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr
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Leu	Val	Ala	Tyr	Gln	Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro
			565						570			575			
Pro	Ser	Trp	Asp	Gln	Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr
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Leu	His	Gly	Pro	Thr	Pro	Leu	Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn
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Glu	Ile	Thr	Leu	Thr	His	Pro	Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met
			610						615			620			
Ser	Ala	Asp	Leu	Glu	Val	Val	Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly

625	630	635	640
Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val			
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Ile Val Gly Arg Val Val Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp			
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Arg Glu Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu Cys			
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 <212> DNA
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<220>
 <223> Description of Artificial Sequence: pd.deltaNS3NS5

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cac tta ccg tac atc gag caa ggg atg atg ctc gcc gag cag ttc aag His Leu Pro Tyr Ile Glu Gln Gly Met Met Leu Ala Glu Gln Phe Lys 475 480 485			14211
cag aag gcc ctc ggc ctc ctg cag acc gcg tcc cgt cag gca gag gtt Gln Lys Ala Leu Gly Leu Leu Gln Thr Ala Ser Arg Gln Ala Glu Val 490 495 500 505			14259

atc gcc cct gct gtc cag acc aac tgg caa aaa ctc gag acc ttc tgg	14307
Ile Ala Pro Ala Val Gln Thr Asn Trp Gln Lys Leu Glu Thr Phe Trp	
510 515 520	
gcg aag cat atg tgg aac ttc atc agt ggg ata caa tac ttg gcg ggc	14355
Ala Lys His Met Trp Asn Phe Ile Ser Gly Ile Gln Tyr Leu Ala Gly	
525 530 535	
ttg tca acg ctg cct ggt aac ccc gcc att gct tca ttg atg gct ttt	14403
Leu Ser Thr Leu Pro Gly Asn Pro Ala Ile Ala Ser Leu Met Ala Phe	
540 545 550	
aca gct gct gtc acc agc cca cta acc act agc caa acc ctc ctc ttc	14451
Thr Ala Ala Val Thr Ser Pro Leu Thr Thr Ser Gln Thr Leu Leu Phe	
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Asn Ile Leu Gly Gly Trp Val Ala Ala Gln Leu Ala Ala Pro Gly Ala	
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Ala Thr Ala Phe Val Gly Ala Gly Leu Ala Gly Ala Ala Ile Gly Ser	
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Val Gly Leu Gly Lys Val Leu Ile Asp Ile Leu Ala Gly Tyr Gly Ala	
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Gly Val Ala Gly Ala Leu Val Ala Phe Lys Ile Met Ser Gly Glu Val	
620 625 630	
ccc tcc acg gag gac ctg gtc aat cta ctg ccc gcc atc ctc tcg ccc	14691
Pro Ser Thr Glu Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser Pro	
635 640 645	
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Gly Ala Leu Val Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg His	
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Val Gly Pro Gly Glu Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala	
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Phe Ala Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro Glu	
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Ser Asp Ala Ala Ala Arg Val Thr Ala Ile Leu Ser Ser Leu Thr Val	
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Thr Gln Leu Leu Arg Arg Leu His Gln Trp Ile Ser Ser Glu Cys Thr	
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act cca tgc tcc ggt tcc tgg cta agg gac atc tgg gac tgg ata tgc	14979

Thr	Pro	Cys	Ser	Gly	Ser	Trp	Leu	Arg	Asp	Ile	Trp	Asp	Trp	Ile	Cys	
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Glu	Val	Leu	Ser	Asp	Phe	Lys	Thr	Trp	Leu	Lys	Ala	Lys	Leu	Met	Pro	
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cag	ctg	cct	ggg	atc	ccc	ttt	gtg	tcc	tgc	cag	cgc	ggg	tat	aag	ggg	15075
Gln	Leu	Pro	Gly	Ile	Pro	Phe	Val	Ser	Cys	Gln	Arg	Gly	Tyr	Lys	Gly	
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gtc	tgg	cga	ggg	gac	ggc	atc	atg	cac	act	cgc	tgc	cac	tgt	gga	gct	15123
Val	Trp	Arg	Gly	Asp	Gly	Ile	Met	His	Thr	Arg	Cys	His	Cys	Gly	Ala	
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gag	atc	act	gga	cat	gtc	aaa	aac	ggg	acg	atg	agg	atc	gtc	ggg	cct	15171
Glu	Ile	Thr	Gly	His	Val	Lys	Asn	Gly	Thr	Met	Arg	Ile	Val	Gly	Pro	
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agg	acc	tgc	agg	aac	atg	tgg	agt	ggg	acc	ttc	ccc	att	aat	gcc	tac	15219
Arg	Thr	Cys	Arg	Asn	Met	Trp	Ser	Gly	Thr	Phe	Pro	Ile	Asn	Ala	Tyr	
810					815					820					825	
acc	acg	ggc	ccc	tgt	acc	ccc	ctt	cct	gcg	ccg	aac	tac	acg	ttc	gcg	15267
Thr	Thr	Gly	Pro	Cys	Thr	Pro	Leu	Pro	Ala	Pro	Asn	Tyr	Thr	Phe	Ala	
			830						835					840		
cta	tgg	agg	gtg	tct	gca	gag	gaa	tac	gtg	gag	ata	agg	cag	gtg	ggg	15315
Leu	Trp	Arg	Val	Ser	Ala	Glu	Glu	Tyr	Val	Glu	Ile	Arg	Gln	Val	Gly	
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gac	ttc	cac	tac	gtg	acg	ggg	atg	act	act	gac	aat	ctt	aaa	tgc	ccg	15363
Asp	Phe	His	Tyr	Val	Thr	Gly	Met	Thr	Thr	Asp	Asn	Leu	Lys	Cys	Pro	
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Cys	Gln	Val	Pro	Ser	Pro	Glu	Phe	Phe	Thr	Glu	Leu	Asp	Gly	Val	Arg	
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Leu	His	Arg	Phe	Ala	Pro	Pro	Cys	Lys	Pro	Leu	Leu	Arg	Glu	Glu	Val	
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tca	ttc	aga	gta	gga	ctc	cac	gaa	tac	ccg	gta	ggg	tcg	caa	tta	cct	15507
Ser	Phe	Arg	Val	Gly	Leu	His	Glu	Tyr	Pro	Val	Gly	Ser	Gln	Leu	Pro	
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tgc	gag	ccc	gaa	ccg	gac	gtg	gcc	gtg	ttg	acg	tcc	atg	ctc	act	gat	15555
Cys	Glu	Pro	Glu	Pro	Asp	Val	Ala	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	
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ccc	tcc	cat	ata	aca	gca	gag	gcg	gcc	ggg	cga	agg	ttg	gcg	agg	gga	15603
Pro	Ser	His	Ile	Thr	Ala	Glu	Ala	Ala	Gly	Arg	Arg	Leu	Ala	Arg	Gly	
		940					945					950				
tca	ccc	ccc	tct	gtg	gcc	agc	tcc	tcg	gct	agc	cag	cta	tcc	gct	cca	15651
Ser	Pro	Pro	Ser	Val	Ala	Ser	Ser	Ser	Ala	Ser	Gln	Leu	Ser	Ala	Pro	

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Ser Leu Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro Asp Ala Glu			
970	975	980	985
ctc ata gag gcc aac ctc cta tgg agg cag gag atg ggc ggc aac atc			15747
Leu Ile Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn Ile			
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acc agg gtt gag tca gaa aac aaa gtg gtg att ctg gac tcc ttc gat			15795
Thr Arg Val Glu Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe Asp			
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ccg ctt gtg gcg gag gag gac gag cgg gag atc tcc gta ccc gca gaa			15843
Pro Leu Val Ala Glu Glu Asp Glu Arg Glu Ile Ser Val Pro Ala Glu			
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Ile Leu Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala			
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cgg ccg gac tat aac ccc ccg cta gtg gag acg tgg aaa aag ccc gac			15939
Arg Pro Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro Asp			
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tac gaa cca cct gtg gtc cat ggc tgc ccg ctt cca cct cca aag tcc			15987
Tyr Glu Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Pro Lys Ser			
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cct cct gtg cct ccg cct cgg aag aag cgg acg gtg gtc ctc act gaa			16035
Pro Pro Val Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu			
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tca acc cta tct act gcc ttg gcc gag ctc gcc acc aga agc ttt ggc			16083
Ser Thr Leu Ser Thr Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe Gly			
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agc tcc tca act tcc ggc att acg ggc gac aat acg aca aca tcc tct			16131
Ser Ser Ser Thr Ser Gly Ile Thr Gly Asp Asn Thr Thr Thr Ser Ser			
	1115	1120	1125
gag ccc gcc cct tct ggc tgc ccc ccc gac tcc gac gct gag tcc tat			16179
Glu Pro Ala Pro Ser Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser Tyr			
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tcc tcc atg ccc ccc ctg gag ggg gag cct ggg gat ccg gat ctt agc			16227
Ser Ser Met Pro Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser			
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gac ggg tca tgg tca acg gtc agt agt gag gcc aac gcg gag gat gtc			16275
Asp Gly Ser Trp Ser Thr Val Ser Ser Glu Ala Asn Ala Glu Asp Val			
	1165	1170	1175
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Val Cys Cys Ser Met Ser Tyr Ser Trp Thr Gly Ala Leu Val Thr Pro			
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tgc gcc gcg gaa gaa cag aaa ctg ccc atc aat gca cta agc aac tcg	16371
Cys Ala Ala Glu Glu Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser	
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ttg cta cgt cac cac aat ttg gtg tat tcc acc acc tca cgc agt gct	16419
Leu Leu Arg His His Asn Leu Val Tyr Ser Thr Thr Ser Arg Ser Ala	
1210 1215 1220 1225	
tgc caa agg cag aag aaa gtc aca ttt gac aga ctg caa gtt ctg gac	16467
Cys Gln Arg Gln Lys Lys Val Thr Phe Asp Arg Leu Gln Val Leu Asp	
1230 1235 1240	
agc cat tac cag gac gta ctc aag gag gtt aaa gca gcg gcg tca aaa	16515
Ser His Tyr Gln Asp Val Leu Lys Glu Val Lys Ala Ala Ala Ser Lys	
1245 1250 1255	
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Val Lys Ala Asn Leu Leu Ser Val Glu Glu Ala Cys Ser Leu Thr Pro	
1260 1265 1270	
cca cac tca gcc aaa tcc aag ttt ggt tat ggg gca aaa gac gtc cgt	16611
Pro His Ser Ala Lys Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val Arg	
1275 1280 1285	
tgc cat gcc aga aag gcc gta acc cac atc aac tcc gtg tgg aaa gac	16659
Cys His Ala Arg Lys Ala Val Thr His Ile Asn Ser Val Trp Lys Asp	
1290 1295 1300 1305	
ctt ctg gaa gac aat gta aca cca ata gac act acc atc atg gct aag	16707
Leu Leu Glu Asp Asn Val Thr Pro Ile Asp Thr Thr Ile Met Ala Lys	
1310 1315 1320	
aac gag gtt ttc tgc gtt cag cct gag aag ggg ggt cgt aag cca gct	16755
Asn Glu Val Phe Cys Val Gln Pro Glu Lys Gly Gly Arg Lys Pro Ala	
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cgt ctc atc gtg ttc ccc gat ctg ggc gtg cgc gtg tgc gaa aag atg	16803
Arg Leu Ile Val Phe Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met	
1340 1345 1350	
gct ttg tac gac gtg gtt aca aag ctc ccc ttg gcc gtg atg gga agc	16851
Ala Leu Tyr Asp Val Val Thr Lys Leu Pro Leu Ala Val Met Gly Ser	
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tcc tac gga ttc caa tac tca cca gga cag cgg gtt gaa ttc ctc gtg	16899
Ser Tyr Gly Phe Gln Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val	
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caa gcg tgg aag tcc aag aaa acc cca atg ggg ttc tcg tat gat acc	16947
Gln Ala Trp Lys Ser Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp Thr	
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cgc tgc ttt gac tcc aca gtc act gag agc gac atc cgt acg gag gag	16995
Arg Cys Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu	
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Ala Ile Tyr Gln Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile	
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aag tcc ctc acc gag agg ctt tat gtt ggg ggc cct ctt acc aat tca	17091
Lys Ser Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser	
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Arg Gly Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu	
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aca act agc tgt ggt aac acc ctc act tgc tac atc aag gcc cgg gca	17187
Thr Thr Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala	
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gcc tgt cga gcc gca ggg ctc cag gac tgc acc atg ctc gtg tgt ggc	17235
Ala Cys Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly	
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Asp Asp Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala	
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Ala Ser Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro	
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cct ggg gac ccc cca caa cca gaa tac gac ttg gag ctc ata aca tca	17379
Pro Gly Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser	
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tgc tcc tcc aac gtg tca gtc gcc cac gac ggc gct gga aag agg gtc	17427
Cys Ser Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg Val	
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tac tac ctc acc cgt gac cct aca acc ccc ctc gcg aga gct gcg tgg	17475
Tyr Tyr Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp	
1565 1570 1575	
gag aca gca aga cac act cca gtc aat tcc tgg cta ggc aac ata atc	17523
Glu Thr Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile	
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atg ttt gcc ccc aca ctg tgg gcg agg atg ata ctg atg acc cat ttc	17571
Met Phe Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His Phe	
1595 1600 1605	
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Phe Ser Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys	
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gag atc tac ggg gcc tgc tac tcc ata gaa cca ctg gat cta cct cca	17667
Glu Ile Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro	
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atc att caa aga ctc cat ggc ctc agc gca ttt tca ctc cac agt tac	17715
Ile Ile Gln Arg Leu His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr	

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Ser Pro Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly			
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Val Pro Pro Leu Arg Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala			
1675	1680	1685	
agg ctt ctg gcc aga gga ggc agg gct gcc ata tgt ggc aag tac ctc			17859
Arg Leu Leu Ala Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu			
1690	1695	1700	1705
ttc aac tgg gca gta aga aca aag ctc aaa ctc act cca ata gcg gcc			17907
Phe Asn Trp Ala Val Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala			
1710	1715	1720	
gct ggc cag ctg gac ttg tcc ggc tgg ttc acg gct ggc tac agc ggg			17955
Ala Gly Gln Leu Asp Leu Ser Gly Trp Phe Thr Ala Gly Tyr Ser Gly			
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gga gac att tat cac agc gtg tct cat gcc cgg ccc cgc tgg atc tgg			18003
Gly Asp Ile Tyr His Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp			
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Asn Arg			
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<210> 9

<211> 1771

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: pd.deltaNS3NS5

<400> 9

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Ser	Val	Ala	Ala	Thr	Leu	Gly	Phe	Gly	Ala	Tyr	Met	Ser	Lys	Ala	His
			20					25					30		
Gly	Ile	Asp	Pro	Asn	Ile	Arg	Thr	Gly	Val	Arg	Thr	Ile	Thr	Thr	Gly
		35					40						45		

Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 50 55 60
 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 65 70 75 80
 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
 85 90 95
 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
 100 105 110
 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
 115 120 125
 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
 130 135 140
 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
 145 150 155 160
 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
 165 170 175
 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
 180 185 190
 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
 195 200 205
 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
 210 215 220
 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
 225 230 235 240
 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
 245 250 255
 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
 260 265 270
 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
 275 280 285
 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
 290 295 300
 Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly
 305 310 315 320
 Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr
 325 330 335
 Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr
 340 345 350

Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser	Trp	Asp	Gln	Met	Trp	355	360	365	
Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His	Gly	Pro	Thr	Pro	Leu	370	375	380	
Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Ile	Thr	Leu	Thr	His	Pro	385	390	395	400
Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	Ser	Ala	Asp	Leu	Glu	Val	Val	405	410	415	
Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu	Ala	Ala	Leu	Ala	Ala	420	425	430	
Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val	Ile	Val	Gly	Arg	Val	Val	Leu	435	440	445	
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Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	Ala	Leu	Gly	Leu	Leu	485	490	495	
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Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr
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Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg
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aca att acc act ggc agc ccc atc acg tac tcc acc tac ggc aag ttc 12855
Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe
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ctt gcc gac ggc ggg tgc tgc ggg ggc gct tat gac ata ata att tgt 12903
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gac gag tgc cac tcc acg gat gcc aca tcc atc ttg ggc att ggc act 12951
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gtc ctt gac caa gca gag act gcg ggg gcg aga ctg gtt gtg ctc gcc 12999
Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala
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acc gcc acc cct ccg ggc tcc gtc act gtg ccc cat ccc aac atc gag 13047
Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile Glu
110 115 120
gag gtt gct ctg tcc acc acc gga gag atc cct ttt tac ggc aag gct 13095
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Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His
140 145 150 155
tca aag aag aag tgc gac gaa ctc gcc gca aag ctg gtc gca ttg ggc 13191
Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly
160 165 170
atc aat gcc gtg gcc tac tac cgc ggt ctt gac gtg tcc gtc atc ccg 13239

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Thr	Ser	Gly	Asp	Val	Val	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	Thr	Gly	
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Tyr	Thr	Gly	Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	Val	Thr	
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Gln	Thr	Val	Asp	Phe	Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Ile	
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Thr	Leu	Pro	Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	Arg	Thr	
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Pro	Ser	Gly	Met	Phe	Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	
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Gly	Cys	Ala	Trp	Tyr	Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	Arg	Leu	
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Arg	Ala	Tyr	Met	Asn	Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu	
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gaa	ttt	tgg	gag	ggc	gtc	ttt	aca	ggc	ctc	act	cat	ata	gat	gcc	cac	13671
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Phe	Leu	Ser	Gln	Thr	Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr	Leu	Val	
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Ala	Tyr	Gln	Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser	
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Trp	Asp	Gln	Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His	
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Gly	Pro	Thr	Pro	Leu	Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Ile	
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acc	ctg	acg	cac	cca	gtc	acc	aaa	tac	atc	atg	aca	tgc	atg	tcg	gcc	13911
Thr	Leu	Thr	His	Pro	Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	Ser	Ala	

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Asp	Leu	Glu	Val	Val	Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu					
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Val	Leu	Tyr	Arg	Glu	Phe	Asp	Glu	Met	Glu	Glu	Cys	Ser	Gln	His	Leu					
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Thr Glu Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala	
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Pro Gly Glu Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala	
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Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp	
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Cys Ser Gly Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val	
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Leu Ser Asp Phe Lys Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu	
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Pro Gly Ile Pro Phe Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp	
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Cys Arg Asn Met Trp Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr	
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Arg	Val	Gly	Leu	His	Glu	Tyr	Pro	Val	Gly	Ser	Gln	Leu	Pro	Cys	Glu	
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Pro	Glu	Pro	Asp	Val	Ala	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	Pro	Ser	
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His	Ile	Thr	Ala	Glu	Ala	Ala	Gly	Arg	Arg	Leu	Ala	Arg	Gly	Ser	Pro	
940					945					950					955	
ccc	tct	gtg	gcc	agc	tcc	tcg	gct	agc	cag	cta	tcc	gct	cca	tct	ctc	15591
Pro	Ser	Val	Ala	Ser	Ser	Ser	Ala	Ser	Gln	Leu	Ser	Ala	Pro	Ser	Leu	
				960					965					970		
aag	gca	act	tgc	acc	gct	aac	cat	gac	tcc	cct	gat	gct	gag	ctc	ata	15639
Lys	Ala	Thr	Cys	Thr	Ala	Asn	His	Asp	Ser	Pro	Asp	Ala	Glu	Leu	Ile	
			975					980					985			
gag	gcc	aac	ctc	cta	tgg	agg	cag	gag	atg	ggc	ggc	aac	atc	acc	agg	15687
Glu	Ala	Asn	Leu	Leu	Trp	Arg	Gln	Glu	Met	Gly	Gly	Asn	Ile	Thr	Arg	
		990					995					1000				
gtt	gag	tca	gaa	aac	aaa	gtg	gtg	att	ctg	gac	tcc	ttc	gat	ccg	ctt	15735
Val	Glu	Ser	Glu	Asn	Lys	Val	Val	Ile	Leu	Asp	Ser	Phe	Asp	Pro	Leu	
	1005					1010				1015						
gtg	gcg	gag	gag	gac	gag	cgg	gag	atc	tcc	gta	ccc	gca	gaa	atc	ctg	15783
Val	Ala	Glu	Glu	Asp	Glu	Arg	Glu	Ile	Ser	Val	Pro	Ala	Glu	Ile	Leu	
1020				1025				1030						1035		
cgg	aag	tct	cgg	aga	ttc	gcc	cag	gcc	ctg	ccc	gtt	tgg	gcg	cgg	ccg	15831
Arg	Lys	Ser	Arg	Arg	Phe	Ala	Gln	Ala	Leu	Pro	Val	Trp	Ala	Arg	Pro	
				1040				1045						1050		
gac	tat	aac	ccc	ccg	cta	gtg	gag	acg	tgg	aaa	aag	ccc	gac	tac	gaa	15879
Asp	Tyr	Asn	Pro	Pro	Leu	Val	Glu	Thr	Trp	Lys	Lys	Pro	Asp	Tyr	Glu	
			1055					1060					1065			
cca	cct	gtg	gtc	cat	ggc	tgc	ccg	ctt	cca	cct	cca	aag	tcc	cct	cct	15927
Pro	Pro	Val	Val	His	Gly	Cys	Pro	Leu	Pro	Pro	Pro	Lys	Ser	Pro	Pro	
		1070					1075					1080				
gtg	cct	ccg	cct	cgg	aag	aag	cgg	acg	gtg	gtc	ctc	act	gaa	tca	acc	15975
Val	Pro	Pro	Pro	Arg	Lys	Lys	Arg	Thr	Val	Val	Leu	Thr	Glu	Ser	Thr	

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cta tct act gcc ttg gcc gag ctc gcc acc aga agc ttt ggc agc tcc			16023
Leu Ser Thr Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser			
1100	1105	1110	1115
tca act tcc ggc att acg ggc gac aat acg aca aca tcc tct gag ccc			16071
Ser Thr Ser Gly Ile Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro			
1120	1125	1130	
gcc cct tct ggc tgc ccc ccc gac tcc gac gct gag tcc tat tcc tcc			16119
Ala Pro Ser Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser			
1135	1140	1145	
atg ccc ccc ctg gag ggg gag cct ggg gat ccg gat ctt agc gac ggg			16167
Met Pro Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly			
1150	1155	1160	
tca tgg tca acg gtc agt agt gag gcc aac gcg gag gat gtc gtg tgc			16215
Ser Trp Ser Thr Val Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys			
1165	1170	1175	
tgc tca atg tct tac tct tgg aca ggc gca ctc gtc acc ccg tgc gcc			16263
Cys Ser Met Ser Tyr Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala			
1180	1185	1190	1195
gcg gaa gaa cag aaa ctg ccc atc aat gca cta agc aac tcg ttg cta			16311
Ala Glu Glu Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu			
1200	1205	1210	
cgt cac cac aat ttg gtg tat tcc acc acc tca cgc agt gct tgc caa			16359
Arg His His Asn Leu Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln			
1215	1220	1225	
agg cag aag aaa gtc aca ttt gac aga ctg caa gtt ctg gac agc cat			16407
Arg Gln Lys Lys Val Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His			
1230	1235	1240	
tac cag gac gta ctc aag gag gtt aaa gca gcg gcg tca aaa gtg aag			16455
Tyr Gln Asp Val Leu Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys			
1245	1250	1255	
gct aac ttg cta tcc gta gag gaa gct tgc agc ctg acg ccc cca cac			16503
Ala Asn Leu Leu Ser Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His			
1260	1265	1270	1275
tca gcc aaa tcc aag ttt ggt tat ggg gca aaa gac gtc cgt tgc cat			16551
Ser Ala Lys Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His			
1280	1285	1290	
gcc aga aag gcc gta acc cac atc aac tcc gtg tgg aaa gac ctt ctg			16599
Ala Arg Lys Ala Val Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu			
1295	1300	1305	
gaa gac aat gta aca cca ata gac act acc atc atg gct aag aac gag			16647
Glu Asp Asn Val Thr Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu			
1310	1315	1320	

gtt ttc tgc gtt cag cct gag aag ggg ggt cgt aag cca gct cgt ctc Val Phe Cys Val Gln Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu 1325 1330 1335	16695
atc gtg ttc ccc gat ctg ggc gtg cgc gtg tgc gaa aag atg gct ttg Ile Val Phe Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu 1340 1345 1350 1355	16743
tac gac gtg gtt aca aag ctc ccc ttg gcc gtg atg gga agc tcc tac Tyr Asp Val Val Thr Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr 1360 1365 1370	16791
gga ttc caa tac tca cca gga cag cgg gtt gaa ttc ctc gtg caa gcg Gly Phe Gln Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala 1375 1380 1385	16839
tgg aag tcc aag aaa acc cca atg ggg ttc tcg tat gat acc cgc tgc Trp Lys Ser Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys 1390 1395 1400	16887
ttt gac tcc aca gtc act gag agc gac atc cgt acg gag gag gca atc Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile 1405 1410 1415	16935
tac caa tgt tgt gac ctc gac ccc caa gcc cgc gtg gcc atc aag tcc Tyr Gln Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser 1420 1425 1430 1435	16983
ctc acc gag agg ctt tat gtt ggg ggc cct ctt acc aat tca agg ggg Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly 1440 1445 1450	17031
gag aac tgc ggc tat cgc agg tgc cgc gcg agc ggc gta ctg aca act Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr 1455 1460 1465	17079
agc tgt ggt aac acc ctc act tgc tac atc aag gcc cgg gca gcc tgt Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys 1470 1475 1480	17127
cga gcc gca ggg ctc cag gac tgc acc atg ctc gtg tgt ggc gac gac Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp 1485 1490 1495	17175
tta gtc gtt atc tgt gaa agc gcg ggg gtc cag gag gac gcg gcg agc Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser 1500 1505 1510 1515	17223
ctg aga gcc ttc acg gag gct atg acc agg tac tcc gcc ccc cct ggg Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly 1520 1525 1530	17271
gac ccc cca caa cca gaa tac gac ttg gag ctc ata aca tca tgc tcc Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser 1535 1540 1545	17319
tcc aac gtg tca gtc gcc cac gac ggc gct gga aag agg gtc tac tac	17367

Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr
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 Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr
 1565 1570 1575

gca aga cac act cca gtc aat tcc tgg cta ggc aac ata atc atg ttt 17463
 Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe
 1580 1585 1590 1595

gcc ccc aca ctg tgg gcg agg atg ata ctg atg acc cat ttc ttt agc 17511
 Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser
 1600 1605 1610

gtc ctt ata gcc agg gac cag ctt gaa cag gcc ctc gat tgc gag atc 17559
 Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile
 1615 1620 1625

tac ggg gcc tgc tac tcc ata gaa cca ctg gat cta cct cca atc att 17607
 Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile
 1630 1635 1640

caa aga ctc cat ggc ctc agc gca ttt tca ctc cac agt tac tct cca 17655
 Gln Arg Leu His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro
 1645 1650 1655

ggt gaa atc aat agg gtg gcc gca tgc ctc aga aaa ctt ggg gta ccg 17703
 Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro
 1660 1665 1670 1675

ccc ttg cga gct tgg aga cac cgg gcc cgg agc gtc cgc gct agg ctt 17751
 Pro Leu Arg Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu
 1680 1685 1690

ctg gcc aga gga ggc agg gct gcc ata tgt ggc aag tac ctc ttc aac 17799
 Leu Ala Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn
 1695 1700 1705

tgg gca gta aga aca aag ctc aaa ctc act cca ata gcg gcc gct ggc 17847
 Trp Ala Val Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly
 1710 1715 1720

cag ctg gac ttg tcc ggc tgg ttc acg gct ggc tac agc ggg gga gac 17895
 Gln Leu Asp Leu Ser Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp
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att tat cac agc gtg tct cat gcc cgg ccc cgc tgg atc tgg ttt tgc 17943
 Ile Tyr His Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys
 1740 1745 1750 1755

cta ctc ctg ctt gct gca ggg gta ggc atc tac ctc ctc ccc aac cga 17991
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 1760 1765 1770

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 tatatgtagc tttcgacatg atttatcttc gtttctgca ggtttttgtt ctgtgcagtt 19611
 gggttaagaa tactgggcaa tttcatgttt cttcaacact acatatgctg atatatacca 19671
 atctaagtct gtgctccttc cttcgttctt ccttctgttc ggagattacc gaatcaaaaa 19731
 aatttcaagg aaaccgaaat caaaaaaag aataaaaaaa aaatgatgaa ttgaaaagct 19791

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 <211> 1771
 <212> PRT
 <213> Artificial Sequence

<220>
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 pd.deltaNS3NS5.pj

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 20 25 30
 Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
 35 40 45
 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 50 55 60
 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 65 70 75 80
 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
 85 90 95
 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
 100 105 110
 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
 115 120 125
 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
 130 135 140
 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
 145 150 155 160
 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
 165 170 175
 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
 180 185 190
 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
 195 200 205
 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
 210 215 220
 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
 225 230 235 240

Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
 245 250 255
 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
 260 265 270
 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
 275 280 285
 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
 290 295 300
 Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly
 305 310 315 320
 Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr
 325 330 335
 Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr
 340 345 350
 Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp
 355 360 365
 Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu
 370 375 380
 Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile Thr Leu Thr His Pro
 385 390 395 400
 Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala Asp Leu Glu Val Val
 405 410 415
 Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala
 420 425 430
 Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg Val Val Leu
 435 440 445
 Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu
 450 455 460
 Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln
 465 470 475 480
 Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu
 485 490 495
 Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val Gln Thr
 500 505 510
 Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe
 515 520 525
 Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn
 530 535 540

Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro
 545 550 555 560
 Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
 565 570 575
 Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe Val Gly Ala
 580 585 590
 Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu
 595 600 605
 Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val
 610 615 620
 Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val
 625 630 635 640
 Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val
 645 650 655
 Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
 660 665 670
 Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
 675 680 685
 Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val
 690 695 700
 Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu
 705 710 715 720
 His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp
 725 730 735
 Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys
 740 745 750
 Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe
 755 760 765
 Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile
 770 775 780
 Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys
 785 790 795 800
 Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp
 805 810 815
 Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro
 820 825 830
 Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu
 835 840 845

Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly
 850 855 860
 Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
 865 870 875 880
 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
 885 890 895
 Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His
 900 905 910
 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val
 915 920 925
 Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu
 930 935 940
 Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser
 945 950 955 960
 Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr
 965 970 975
 Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu
 980 985 990
 Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn
 995 1000 1005
 Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp
 1010 1015 1020
 Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg
 1025 1030 1035 1040
 Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro
 1045 1050 1055
 Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His
 1060 1065 1070
 Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Pro Arg
 1075 1080 1085
 Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu
 1090 1095 1100
 Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Ser Thr Ser Gly Ile
 1105 1110 1115 1120
 Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys
 1125 1130 1135
 Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu
 1140 1145 1150

Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val
 1155 1160 1165
 Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr
 1170 1175 1180
 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys
 1185 1190 1195 1200
 Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu
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 Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys Lys Val
 1220 1225 1230
 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu
 1235 1240 1245
 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser
 1250 1255 1260
 Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys
 1265 1270 1275 1280
 Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val
 1285 1290 1295
 Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr
 1300 1305 1310
 Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln
 1315 1320 1325
 Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp
 1330 1335 1340
 Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr
 1345 1350 1355 1360
 Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser
 1365 1370 1375
 Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys
 1380 1385 1390
 Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val
 1395 1400 1405
 Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys Cys Asp
 1410 1415 1420
 Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
 1425 1430 1435 1440
 Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
 1445 1450 1455

Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr
 1460 1465 1470
 Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
 1475 1480 1485
 Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys
 1490 1495 1500
 Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr
 1505 1510 1515 1520
 Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro
 1525 1530 1535
 Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val
 1540 1545 1550
 Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro
 1555 1560 1565
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 1570 1575 1580
 Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp
 1585 1590 1595 1600
 Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile Ala Arg
 1605 1610 1615
 Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala Cys Tyr
 1620 1625 1630
 Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu His Gly
 1635 1640 1645
 Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg
 1650 1655 1660
 Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp
 1665 1670 1675 1680
 Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly
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 Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr
 1700 1705 1710
 Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp Leu Ser
 1715 1720 1725
 Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val
 1730 1735 1740
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Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg
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<212> DNA
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<220>
<223> Description of Artificial Sequence:
pd.delta.NS3NS5.pj.core121

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Glu	Val	Ala	Leu	Ser	Thr	Thr	Gly	Glu	Ile	Pro	Phe	Tyr	Gly	Lys	Ala		
	125						130				135						
atc	ccc	ctc	gaa	gta	atc	aag	ggg	ggg	aga	cat	ctc	atc	ttc	tgt	cat	13143	
Ile	Pro	Leu	Glu	Val	Ile	Lys	Gly	Gly	Arg	His	Leu	Ile	Phe	Cys	His		
	140					145				150					155		
tca	aag	aag	aag	tgc	gac	gaa	ctc	gcc	gca	aag	ctg	gtc	gca	ttg	ggc	13191	
Ser	Lys	Lys	Lys	Cys	Asp	Glu	Leu	Ala	Ala	Lys	Leu	Val	Ala	Leu	Gly		
				160					165					170			
atc	aat	gcc	gtg	gcc	tac	tac	cgc	ggt	ctt	gac	gtg	tcc	gtc	atc	ccg	13239	
Ile	Asn	Ala	Val	Ala	Tyr	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val	Ile	Pro		
			175					180					185				
acc	agc	ggc	gat	ggt	gtc	gtc	gtg	gca	acc	gat	gcc	ctc	atg	acc	ggc	13287	
Thr	Ser	Gly	Asp	Val	Val	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	Thr	Gly		
			190					195					200				
tat	acc	ggc	gac	ttc	gac	tcg	gtg	ata	gac	tgc	aat	acg	tgt	gtc	acc	13335	
Tyr	Thr	Gly	Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	Val	Thr		
	205						210				215						
cag	aca	gtc	gat	ttc	agc	ctt	gac	cct	acc	ttc	acc	att	gag	aca	atc	13383	
Gln	Thr	Val	Asp	Phe	Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Ile		
	220					225				230					235		
acg	ctc	ccc	caa	gat	gct	gtc	tcc	cgc	act	caa	cgt	cgg	ggc	agg	act	13431	
Thr	Leu	Pro	Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	Arg	Thr		
				240					245					250			
ggc	agg	ggg	aag	cca	ggc	atc	tac	aga	ttt	gtg	gca	ccg	ggg	gag	cgc	13479	
Gly	Arg	Gly	Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	Glu	Arg		
			255					260					265				
ccc	tcc	ggc	atg	ttc	gac	tcg	tcc	gtc	ctc	tgt	gag	tgc	tat	gac	gca	13527	
Pro	Ser	Gly	Met	Phe	Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala		
			270					275					280				
ggc	tgt	gct	tgg	tat	gag	ctc	acg	ccc	gcc	gag	act	aca	ggt	agg	cta	13575	
Gly	Cys	Ala	Trp	Tyr	Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	Arg	Leu		
	285					290					295						
cga	gcg	tac	atg	aac	acc	ccg	ggg	ctt	ccc	gtg	tgc	cag	gac	cat	ctt	13623	
Arg	Ala	Tyr	Met	Asn	Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu		

300	305	310	315	
gaa ttt tgg gag ggc gtc ttt aca ggc ctc act cat ata gat gcc cac	13671			
Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile Asp Ala His				
320 325 330				
ttt cta tcc cag aca aag cag agt ggg gag aac ctt cct tac ctg gta	13719			
Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val				
335 340 345				
gcg tac caa gcc acc gtg tgc gct agg gct caa gcc cct ccc cca tcg	13767			
Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser				
350 355 360				
tgg gac cag atg tgg aag tgt ttg att cgc ctc aag ccc acc ctc cat	13815			
Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His				
365 370 375				
ggg cca aca ccc ctg cta tac aga ctg ggc gct gtt cag aat gaa atc	13863			
Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile				
380 385 390 395				
acc ctg acg cac cca gtc acc aaa tac atc atg aca tgc atg tcg gcc	13911			
Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala				
400 405 410				
gac ctg gag gtc gtc acg agc acc tgg gtg ctc gtt ggc ggc gtc ctg	13959			
Asp Leu Glu Val Val Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu				
415 420 425				
gct gct ttg gcc gcg tat tgc ctg tca aca ggc tgc gtg gtc ata gtg	14007			
Ala Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val				
430 435 440				
ggc agg gtc gtc ttg tcc ggg aag ccg gca atc ata cct gac agg gaa	14055			
Gly Arg Val Val Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu				
445 450 455				
gtc ctc tac cga gag ttc gat gag atg gaa gag tgc tct cag cac tta	14103			
Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu				
460 465 470 475				
ccg tac atc gag caa ggg atg atg ctc gcc gag cag ttc aag cag aag	14151			
Pro Tyr Ile Glu Gln Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys				
480 485 490				
gcc ctc ggc ctc ctg cag acc gcg tcc cgt cag gca gag gtt atc gcc	14199			
Ala Leu Gly Leu Leu Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala				
495 500 505				
cct gct gtc cag acc aac tgg caa aaa ctc gag acc ttc tgg gcg aag	14247			
Pro Ala Val Gln Thr Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys				
510 515 520				
cat atg tgg aac ttc atc agt ggg ata caa tac ttg gcg ggc ttg tca	14295			
His Met Trp Asn Phe Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser				
525 530 535				

acg ctg cct ggt aac ccc gcc att gct tca ttg atg gct ttt aca gct	14343
Thr Leu Pro Gly Asn Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala	
540 545 550 555	
gct gtc acc agc cca cta acc act agc caa acc ctc ctc ttc aac ata	14391
Ala Val Thr Ser Pro Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile	
560 565 570	
ttg ggg ggg tgg gtg gct gcc cag ctc gcc gcc ccc ggt gcc gct act	14439
Leu Gly Gly Trp Val Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr	
575 580 585	
gcc ttt gtg ggc gct ggc tta gct ggc gcc gcc atc ggc agt gtt gga	14487
Ala Phe Val Gly Ala Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly	
590 595 600	
ctg ggg aag gtc ctc ata gac atc ctt gca ggg tat ggc gcg ggc gtg	14535
Leu Gly Lys Val Leu Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val	
605 610 615	
gcg gga gct ctt gtg gca ttc aag atc atg agc ggt gag gtc ccc tcc	14583
Ala Gly Ala Leu Val Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser	
620 625 630 635	
acg gag gac ctg gtc aat cta ctg ccc gcc atc ctc tcg ccc gga gcc	14631
Thr Glu Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala	
640 645 650	
ctc gta gtc ggc gtg gtc tgt gca gca ata ctg cgc cgg cac gtt ggc	14679
Leu Val Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg His Val Gly	
655 660 665	
ccg ggc gag ggg gca gtg cag tgg atg aac cgg ctg ata gcc ttc gcc	14727
Pro Gly Glu Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala	
670 675 680	
tcc cgg ggg aac cat gtt tcc ccc acg cac tac gtg ccg gag agc gat	14775
Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp	
685 690 695	
gca gct gcc cgc gtc act gcc ata ctc agc agc ctc act gta acc cag	14823
Ala Ala Ala Arg Val Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln	
700 705 710 715	
ctc ctg agg cga ctg cac cag tgg ata agc tcg gag tgt acc act cca	14871
Leu Leu Arg Arg Leu His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro	
720 725 730	
tgc tcc ggt tcc tgg cta agg gac atc tgg gac tgg ata tgc gag gtg	14919
Cys Ser Gly Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val	
735 740 745	
ttg agc gac ttt aag acc tgg cta aaa gct aag ctc atg cca cag ctg	14967
Leu Ser Asp Phe Lys Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu	
750 755 760	
cct ggg atc ccc ttt gtg tcc tgc cag cgc ggg tat aag ggg gtc tgg	15015

Pro Gly Ile Pro Phe Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp	
765 770 775	
cga ggg gac ggc atc atg cac act cgc tgc cac tgt gga gct gag atc	15063
Arg Gly Asp Gly Ile Met His Thr Arg Cys His Cys Gly Ala Glu Ile	
780 785 790 795	
act gga cat gtc aaa aac ggg acg atg agg atc gtc ggt cct agg acc	15111
Thr Gly His Val Lys Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr	
800 805 810	
tgc agg aac atg tgg agt ggg acc ttc ccc att aat gcc tac acc acg	15159
Cys Arg Asn Met Trp Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr	
815 820 825	
ggc ccc tgt acc ccc ctt cct gcg ccg aac tac acg ttc gcg cta tgg	15207
Gly Pro Cys Thr Pro Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp	
830 835 840	
agg gtg tct gca gag gaa tac gtg gag ata agg cag gtg ggg gac ttc	15255
Arg Val Ser Ala Glu Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe	
845 850 855	
cac tac gtg acg ggt atg act act gac aat ctt aaa tgc ccg tgc cag	15303
His Tyr Val Thr Gly Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln	
860 865 870 875	
gtc cca tcg ccc gaa ttt ttc aca gaa ttg gac ggg gtg cgc cta cat	15351
Val Pro Ser Pro Glu Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His	
880 885 890	
agg ttt gcg ccc ccc tgc aag ccc ttg ctg cgg gag gag gta tca ttc	15399
Arg Phe Ala Pro Pro Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe	
895 900 905	
aga gta gga ctc cac gaa tac ccg gta ggg tcg caa tta cct tgc gag	15447
Arg Val Gly Leu His Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu	
910 915 920	
ccc gaa ccg gac gtg gcc gtg ttg acg tcc atg ctc act gat ccc tcc	15495
Pro Glu Pro Asp Val Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser	
925 930 935	
cat ata aca gca gag gcg gcc ggg cga agg ttg gcg agg gga tca ccc	15543
His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro	
940 945 950 955	
ccc tct gtg gcc agc tcc tcg gct agc cag cta tcc gct cca tct ctc	15591
Pro Ser Val Ala Ser Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu	
960 965 970	
aag gca act tgc acc gct aac cat gac tcc cct gat gct gag ctc ata	15639
Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile	
975 980 985	
gag gcc aac ctc cta tgg agg cag gag atg gcc gcc aac atc acc agg	15687
Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg	

990	995	1000	
gtt gag tca gaa aac aaa gtg gtg att ctg gac tcc ttc gat ccg ctt			15735
Val Glu Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu			
1005	1010	1015	
gtg gcg gag gag gac gag cgg gag atc tcc gta ccc gca gaa atc ctg			15783
Val Ala Glu Glu Asp Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu			
1020	1025	1030	1035
cgg aag tct cgg aga ttc gcc cag gcc ctg ccc gtt tgg gcg cgg ccg			15831
Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro			
1040	1045	1050	
gac tat aac ccc ccg cta gtg gag acg tgg aaa aag ccc gac tac gaa			15879
Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu			
1055	1060	1065	
cca cct gtg gtc cat ggc tgc ccg ctt cca cct cca aag tcc cct cct			15927
Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro			
1070	1075	1080	
gtg cct ccg cct cgg aag aag cgg acg gtg gtc ctc act gaa tca acc			15975
Val Pro Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr			
1085	1090	1095	
cta tct act gcc ttg gcc gag ctc gcc acc aga agc ttt ggc agc tcc			16023
Leu Ser Thr Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser			
1100	1105	1110	1115
tca act tcc ggc att acg ggc gac aat acg aca aca tcc tct gag ccc			16071
Ser Thr Ser Gly Ile Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro			
1120	1125	1130	
gcc cct tct ggc tgc ccc ccc gac tcc gac gct gag tcc tat tcc tcc			16119
Ala Pro Ser Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser			
1135	1140	1145	
atg ccc ccc ctg gag ggg gag cct ggg gat ccg gat ctt agc gac ggg			16167
Met Pro Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly			
1150	1155	1160	
tca tgg tca acg gtc agt agt gag gcc aac gcg gag gat gtc gtg tgc			16215
Ser Trp Ser Thr Val Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys			
1165	1170	1175	
tgc tca atg tct tac tct tgg aca ggc gca ctc gtc acc ccg tgc gcc			16263
Cys Ser Met Ser Tyr Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala			
1180	1185	1190	1195
gcg gaa gaa cag aaa ctg ccc atc aat gca cta agc aac tcg ttg cta			16311
Ala Glu Glu Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu			
1200	1205	1210	
cgt cac cac aat ttg gtg tat tcc acc acc tca cgc agt gct tgc caa			16359
Arg His His Asn Leu Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln			
1215	1220	1225	

agg cag aag aaa gtc aca ttt gac aga ctg caa gtt ctg gac agc cat	16407
Arg Gln Lys Lys Val Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His	
1230 1235 1240	
tac cag gac gta ctc aag gag gtt aaa gca gcg gcg tca aaa gtg aag	16455
Tyr Gln Asp Val Leu Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys	
1245 1250 1255	
gct aac ttg cta tcc gta gag gaa gct tgc agc ctg acg ccc cca cac	16503
Ala Asn Leu Leu Ser Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His	
1260 1265 1270 1275	
tca gcc aaa tcc aag ttt ggt tat ggg gca aaa gac gtc cgt tgc cat	16551
Ser Ala Lys Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His	
1280 1285 1290	
gcc aga aag gcc gta acc cac atc aac tcc gtg tgg aaa gac ctt ctg	16599
Ala Arg Lys Ala Val Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu	
1295 1300 1305	
gaa gac aat gta aca cca ata gac act acc atc atg gct aag aac gag	16647
Glu Asp Asn Val Thr Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu	
1310 1315 1320	
gtt ttc tgc gtt cag cct gag aag ggg ggt cgt aag cca gct cgt ctc	16695
Val Phe Cys Val Gln Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu	
1325 1330 1335	
atc gtg ttc ccc gat ctg ggc gtg cgc gtg tgc gaa aag atg gct ttg	16743
Ile Val Phe Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu	
1340 1345 1350 1355	
tac gac gtg gtt aca aag ctc ccc ttg gcc gtg atg gga agc tcc tac	16791
Tyr Asp Val Val Thr Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr	
1360 1365 1370	
gga ttc caa tac tca cca gga cag cgg gtt gaa ttc ctc gtg caa gcg	16839
Gly Phe Gln Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala	
1375 1380 1385	
tgg aag tcc aag aaa acc cca atg ggg ttc tcg tat gat acc cgc tgc	16887
Trp Lys Ser Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys	
1390 1395 1400	
ttt gac tcc aca gtc act gag agc gac atc cgt acg gag gag gca atc	16935
Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile	
1405 1410 1415	
tac caa tgt tgt gac ctc gac ccc caa gcc cgc gtg gcc atc aag tcc	16983
Tyr Gln Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser	
1420 1425 1430 1435	
ctc acc gag agg ctt tat gtt ggg ggc cct ctt acc aat tca agg ggg	17031
Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly	
1440 1445 1450	
gag aac tgc ggc tat cgc agg tgc cgc gcg agc ggc gta ctg aca act	17079

Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr	
1455 1460 1465	
agc tgt ggt aac acc ctc act tgc tac atc aag gcc cgg gca gcc tgt	17127
Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys	
1470 1475 1480	
cga gcc gca ggg ctc cag gac tgc acc atg ctc gtg tgt ggc gac gac	17175
Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp	
1485 1490 1495	
tta gtc gtt atc tgt gaa agc gcg ggg gtc cag gag gac gcg gcg agc	17223
Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser	
1500 1505 1510 1515	
ctg aga gcc ttc acg gag gct atg acc agg tac tcc gcc ccc cct ggg	17271
Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly	
1520 1525 1530	
gac ccc cca caa cca gaa tac gac ttg gag ctc ata aca tca tgc tcc	17319
Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser	
1535 1540 1545	
tcc aac gtg tca gtc gcc cac gac ggc gct gga aag agg gtc tac tac	17367
Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr	
1550 1555 1560	
ctc acc cgt gac cct aca acc ccc ctc gcg aga gct gcg tgg gag aca	17415
Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr	
1565 1570 1575	
gca aga cac act cca gtc aat tcc tgg cta ggc aac ata atc atg ttt	17463
Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe	
1580 1585 1590 1595	
gcc ccc aca ctg tgg gcg agg atg ata ctg atg acc cat ttc ttt agc	17511
Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser	
1600 1605 1610	
gtc ctt ata gcc agg gac cag ctt gaa cag gcc ctc gat tgc gag atc	17559
Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile	
1615 1620 1625	
tac ggg gcc tgc tac tcc ata gaa cca ctg gat cta cct cca atc att	17607
Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile	
1630 1635 1640	
caa aga ctc cat ggc ctc agc gca ttt tca ctc cac agt tac tct cca	17655
Gln Arg Leu His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro	
1645 1650 1655	
ggt gaa atc aat agg gtg gcc gca tgc ctc aga aaa ctt ggg gta ccg	17703
Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro	
1660 1665 1670 1675	
ccc ttg cga gct tgg aga cac cgg gcc cgg agc gtc cgc gct agg ctt	17751
Pro Leu Arg Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu	

1680	1685	1690	
ctg gcc aga gga ggc agg gct gcc ata tgt ggc aag tac ctc ttc aac			17799
Leu Ala Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn			
1695	1700	1705	
tgg gca gta aga aca aag ctc aaa ctc act cca ata gcg gcc gct ggc			17847
Trp Ala Val Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly			
1710	1715	1720	
cag ctg gac ttg tcc ggc tgg ttc acg gct ggc tac agc ggg gga gac			17895
Gln Leu Asp Leu Ser Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp			
1725	1730	1735	
att tat cac agc gtg tct cat gcc cgg ccc cgc tgg atc tgg ttt tgc			17943
Ile Tyr His Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys			
1740	1745	1750	1755
cta ctc ctg ctt gct gca ggg gta ggc atc tac ctc ctc ccc aac cga			17991
Leu Leu Leu Leu Ala Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg			
1760	1765	1770	
atg agc acg aat cct aaa cct caa aga aag acc aaa cgt aac acc aac			18039
Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn			
1775	1780	1785	
cgg cgg ccg cag gac gtc aag ttc ccg ggt ggc ggt cag atc gtt ggt			18087
Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly			
1790	1795	1800	
gga gtt tac ttg ttg ccg cgc agg ggc cct aga ttg ggt gtg cgc gcg			18135
Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala			
1805	1810	1815	
acg aga aag act tcc gag cgg tcg caa cct cga ggt aga cgt cag cct			18183
Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro			
1820	1825	1830	1835
atc ccc aag gct cgt cgg ccc gag ggc agg acc tgg gct cag ccc ggg			18231
Ile Pro Lys Ala Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly			
1840	1845	1850	
tac cct tgg ccc ctc tat ggc aat gag ggc tgc ggg tgg gcg gga tgg			18279
Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp			
1855	1860	1865	
ctc ctg tct ccc cgt ggc tct cgg cct agc tgg ggc ccc aca gac ccc			18327
Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro			
1870	1875	1880	
cgg cgt agg tcg cgc aat ttg ggt aag taatagtcga ctttgttccc			18374
Arg Arg Arg Ser Arg Asn Leu Gly Lys			
1885	1890		
actgtacttt tagctcgtac aaaatacaat atacttttca tttctccgta aacaacatgt			18434
tttcccatgt aatatccttt tctatttttc gttccgttac caactttaca catactttat			18494

atagctattc acttctatac actaaaaaac taagacaatt ttaattttgc tgcctgccat 18554
 atttcaattt gttataaatt cctataattt atcctattag tagctaaaaa aagatgaatg 18614
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 <211> 1892
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 pd.delta.NS3NS5.pj.core121

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 35 40 45
 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 50 55 60
 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 65 70 75 80
 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
 85 90 95
 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
 100 105 110
 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
 115 120 125
 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
 130 135 140
 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
 145 150 155 160
 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
 165 170 175
 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
 180 185 190
 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
 195 200 205
 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
 210 215 220
 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
 225 230 235 240
 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
 245 250 255

Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	Glu	Arg	Pro	Ser	Gly	Met	Phe			
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Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	Gly	Cys	Ala	Trp	Tyr			
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Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	Arg	Leu	Arg	Ala	Tyr	Met	Asn			
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Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu	Glu	Phe	Trp	Glu	Gly			
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Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	Ala	His	Phe	Leu	Ser	Gln	Thr			
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Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr	Leu	Val	Ala	Tyr	Gln	Ala	Thr			
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Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser	Trp	Asp	Gln	Met	Trp			
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Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His	Gly	Pro	Thr	Pro	Leu			
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Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Ile	Thr	Leu	Thr	His	Pro			
					390					395					400			
Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	Ser	Ala	Asp	Leu	Glu	Val	Val			
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Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu	Ala	Ala	Leu	Ala	Ala			
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Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val	Ile	Val	Gly	Arg	Val	Val	Leu			
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Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp	Arg	Glu	Val	Leu	Tyr	Arg	Glu			
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Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	Ala	Leu	Gly	Leu	Leu			
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Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	Ile	Ala	Pro	Ala	Val	Gln	Thr			
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Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys	His	Met	Trp	Asn	Phe			
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Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser	Thr	Leu	Pro	Gly	Asn			
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Pro	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala	Ala	Val	Thr	Ser	Pro			
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 565 570 575
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 580 585 590
 Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu
 595 600 605
 Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val
 610 615 620
 Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val
 625 630 635 640
 Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val
 645 650 655
 Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
 660 665 670
 Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
 675 680 685
 Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val
 690 695 700
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 740 745 750
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 Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile
 770 775 780
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 835 840 845
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 850 855 860

Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
 865 870 875 880
 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
 885 890 895
 Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His
 900 905 910
 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val
 915 920 925
 Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu
 930 935 940
 Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser
 945 950 955 960
 Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr
 965 970 975
 Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu
 980 985 990
 Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn
 995 1000 1005
 Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp
 1010 1015 1020
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 1045 1050 1055
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 1075 1080 1085
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 Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys
 1125 1130 1135
 Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu
 1140 1145 1150
 Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val
 1155 1160 1165

Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr
 1170 1175 1180
 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys
 1185 1190 1195 1200
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 1250 1255 1260
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 1425 1430 1435 1440
 Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
 1445 1450 1455
 Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr
 1460 1465 1470

Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
 1475 1480 1485
 Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys
 1490 1495 1500
 Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr
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 1525 1530 1535
 Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val
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 Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro
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 1665 1670 1675 1680
 Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly
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 1715 1720 1725
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 1730 1735 1740
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 1745 1750 1755 1760
 Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg Met Ser Thr Asn Pro
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Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp
 1780 1785 1790
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 1795 1800 1805
 Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala Thr Arg Lys Thr Ser
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 1825 1830 1835 1840
 Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly Tyr Pro Trp Pro Leu
 1845 1850 1855
 Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp Leu Leu Ser Pro Arg
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Arg	Val	Ser	Ala	Glu	Glu	Tyr	Val	Glu	Ile	Arg	Gln	Val	Gly	Asp	Phe		
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cac	tac	gtg	acg	ggg	atg	act	act	gac	aac	ctt	aaa	tgc	ccg	tgc	cag	15303	
His	Tyr	Val	Thr	Gly	Met	Thr	Thr	Asp	Asn	Leu	Lys	Cys	Pro	Cys	Gln		
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Val	Pro	Ser	Pro	Glu	Phe	Phe	Thr	Glu	Leu	Asp	Gly	Val	Arg	Leu	His		
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Arg	Phe	Ala	Pro	Pro	Cys	Lys	Pro	Leu	Leu	Arg	Glu	Glu	Val	Ser	Phe		
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Arg	Val	Gly	Leu	His	Glu	Tyr	Pro	Val	Gly	Ser	Gln	Leu	Pro	Cys	Glu		

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Pro Glu Pro Asp Val Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser			
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His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro			
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Pro Ser Val Ala Ser Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu			
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Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile			
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gag gcc aac ctc cta tgg agg cag gag atg ggc gcc aac atc acc agg			15687
Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg			
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Val Glu Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu			
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Val Ala Glu Glu Asp Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu			
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Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro			
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gac tat aac ccc ccg cta gtg gag acg tgg aaa aag ccc gac tac gaa			15879
Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu			
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cca cct gtg gtc cat ggc tgc ccg ctt cca cct cca aag tcc cct cct			15927
Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro			
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Val Pro Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr			
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cta tct act gcc ttg gcc gag ctc gcc acc aga agc ttt ggc agc tcc			16023
Leu Ser Thr Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser			
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tca act tcc ggc att acg ggc gac aat acg aca aca tcc tct gag ccc			16071
Ser Thr Ser Gly Ile Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro			
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gcc cct tct ggc tgc ccc ccc gac tcc gac gct gag tcc tat tcc tcc			16119
Ala Pro Ser Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser			
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Met Pro Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly	
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Ser Trp Ser Thr Val Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys	
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Cys Ser Met Ser Tyr Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala	
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Ala Glu Glu Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu	
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cgt cac cac aat ttg gtg tat tcc acc acc tca cgc agt gct tgc caa	16359
Arg His His Asn Leu Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln	
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Arg Gln Lys Lys Val Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His	
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Tyr Gln Asp Val Leu Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys	
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Ala Asn Leu Leu Ser Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His	
1260 1265 1270 1275	
tca gcc aaa tcc aag ttt ggt tat ggg gca aaa gac gtc cgt tgc cat	16551
Ser Ala Lys Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His	
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gcc aga aag gcc gta acc cac atc aac tcc gtg tgg aaa gac ctt ctg	16599
Ala Arg Lys Ala Val Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu	
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gaa gac aat gta aca cca ata gac act acc atc atg gct aag aac gag	16647
Glu Asp Asn Val Thr Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu	
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Val Phe Cys Val Gln Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu	
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Ile Val Phe Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu	
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Tyr Asp Val Val Thr Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr	
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Trp	Lys	Ser	Lys	Lys	Thr	Pro	Met	Gly	Phe	Ser	Tyr	Asp	Thr	Arg	Cys		
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Phe	Asp	Ser	Thr	Val	Thr	Glu	Ser	Asp	Ile	Arg	Thr	Glu	Glu	Ala	Ile		
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Tyr	Gln	Cys	Cys	Asp	Leu	Asp	Pro	Gln	Ala	Arg	Val	Ala	Ile	Lys	Ser		
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Leu	Arg	Ala	Phe	Thr	Glu	Ala	Met	Thr	Arg	Tyr	Ser	Ala	Pro	Pro	Gly		
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Asp	Pro	Pro	Gln	Pro	Glu	Tyr	Asp	Leu	Glu	Leu	Ile	Thr	Ser	Cys	Ser		
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Leu	Thr	Arg	Asp	Pro	Thr	Thr	Pro	Leu	Ala	Arg	Ala	Ala	Trp	Glu	Thr		
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Ala	Arg	His	Thr	Pro	Val	Asn	Ser	Trp	Leu	Gly	Asn	Ile	Ile	Met	Phe		
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gcc	ccc	aca	ctg	tgg	gcg	agg	atg	ata	ctg	atg	acc	cat	ttc	ttt	agc	17511	
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Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile			
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Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile			
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Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro			
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Pro Leu Arg Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu			
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Leu Ala Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn			
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Trp Ala Val Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly			
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Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn			
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 35 40 45
 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 50 55 60
 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 65 70 75 80
 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala

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Tyr	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val	Ile	Pro	Thr	Ser	Gly	Asp	Val
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Val	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	Thr	Gly	Tyr	Thr	Gly	Asp	Phe
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Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	Val	Thr	Gln	Thr	Val	Asp	Phe
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Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Ile	Thr	Leu	Pro	Gln	Asp
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Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	Arg	Thr	Gly	Arg	Gly	Lys	Pro
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Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	Gly	Cys	Ala	Trp	Tyr
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Thr Ser Thr Trp	Val Leu Val Gly Gly	Val Leu Ala Ala	Leu Ala Ala			
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Tyr Cys Leu Ser	Thr Gly Cys Val Val	Ile Val Gly Arg	Val Val Leu			
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Ser Gly Lys Pro	Ala Ile Ile Pro	Asp Arg Glu Val	Leu Tyr Arg Glu			
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Phe Asp Glu Met	Glu Glu Cys Ser	Gln His Leu Pro	Tyr Ile Glu Gln			
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Gly Met Met Leu	Ala Glu Gln Phe Lys	Gln Lys Ala Leu	Gly Leu Leu			
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Gln Thr Ala Ser	Arg Gln Ala Glu Val	Ile Ala Pro Ala	Val Gln Thr			
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Asn Trp Gln Lys	Leu Glu Thr Phe Trp	Ala Lys His Met	Trp Asn Phe			
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Pro Ala Ile Ala	Ser Leu Met Ala Phe Thr	Ala Ala Val Thr	Ser Pro			
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Leu Thr Thr Ser	Gln Thr Leu Leu Phe	Asn Ile Leu Gly	Gly Trp Val			
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Ala Ala Gln Leu	Ala Ala Pro Gly	Ala Ala Thr Ala	Phe Val Gly Ala			
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Val Cys Ala Ala	Ile Leu Arg Arg	His Val Gly Pro	Gly Glu Gly Ala			
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Val Gln Trp Met	Asn Arg Leu Ile	Ala Phe Ala Ser	Arg Gly Asn His			
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Val Ser Pro Thr	His Tyr Val Pro	Glu Ser Asp Ala	Ala Ala Arg Val			

690	695	700
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Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe 755 760 765		
Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile 770 775 780		
Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys 785 790 795 800		
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Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly 850 855 860		
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 acaagcttac aaaacaaa atg gct gca tat gca gct cag ggc tat aag gtg 12711
 Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val
 1 5 10
 cta gta ctc aac ccc tct gtt gct gca aca ctg ggc ttt ggt gct tac 12759
 Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr
 15 20 25
 atg tcc aag gct cat ggg atc gat cct aac atc agg acc ggg gtg aga 12807
 Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg
 30 35 40
 aca att acc act ggc agc ccc atc acg tac tcc acc tac ggc aag ttc 12855
 Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe
 45 50 55
 ctt gcc gac ggc ggg tgc tgc ggg ggc gct tat gac ata ata att tgt 12903

Leu	Ala	Asp	Gly	Gly	Cys	Ser	Gly	Gly	Ala	Tyr	Asp	Ile	Ile	Ile	Cys	
60					65					70					75	
gac	gag	tgc	cac	tcc	acg	gat	gcc	aca	tcc	atc	ttg	ggc	att	ggc	act	12951
Asp	Glu	Cys	His	Ser	Thr	Asp	Ala	Thr	Ser	Ile	Leu	Gly	Ile	Gly	Thr	
				80					85					90		
gtc	ctt	gac	caa	gca	gag	act	gcg	ggg	gcg	aga	ctg	gtt	gtg	ctc	gcc	12999
Val	Leu	Asp	Gln	Ala	Glu	Thr	Ala	Gly	Ala	Arg	Leu	Val	Val	Leu	Ala	
			95					100					105			
acc	gcc	acc	cct	ccg	ggc	tcc	gtc	act	gtg	ccc	cat	ccc	aac	atc	gag	13047
Thr	Ala	Thr	Pro	Pro	Gly	Ser	Val	Thr	Val	Pro	His	Pro	Asn	Ile	Glu	
			110					115					120			
gag	gtt	gct	ctg	tcc	acc	acc	gga	gag	atc	cct	ttt	tac	ggc	aag	gct	13095
Glu	Val	Ala	Leu	Ser	Thr	Thr	Gly	Glu	Ile	Pro	Phe	Tyr	Gly	Lys	Ala	
			125				130				135					
atc	ccc	ctc	gaa	gta	atc	aag	ggg	ggg	aga	cat	ctc	atc	ttc	tgt	cat	13143
Ile	Pro	Leu	Glu	Val	Ile	Lys	Gly	Gly	Arg	His	Leu	Ile	Phe	Cys	His	
					145					150					155	
140																
tca	aag	aag	aag	tgc	gac	gaa	ctc	gcc	gca	aag	ctg	gtc	gca	ttg	ggc	13191
Ser	Lys	Lys	Lys	Cys	Asp	Glu	Leu	Ala	Ala	Lys	Leu	Val	Ala	Leu	Gly	
				160					165					170		
atc	aat	gcc	gtg	gcc	tac	tac	cgc	ggc	ctt	gac	gtg	tcc	gtc	atc	ccg	13239
Ile	Asn	Ala	Val	Ala	Tyr	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val	Ile	Pro	
			175					180					185			
acc	agc	ggc	gat	gtt	gtc	gtc	gtg	gca	acc	gat	gcc	ctc	atg	acc	ggc	13287
Thr	Ser	Gly	Asp	Val	Val	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	Thr	Gly	
			190					195					200			
tat	acc	ggc	gac	ttc	gac	tcg	gtg	ata	gac	tgc	aat	acg	tgt	gtc	acc	13335
Tyr	Thr	Gly	Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	Val	Thr	
			205				210					215				
cag	aca	gtc	gat	ttc	agc	ctt	gac	cct	acc	ttc	acc	att	gag	aca	atc	13383
Gln	Thr	Val	Asp	Phe	Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Ile	
					225					230					235	
220																
acg	ctc	ccc	caa	gat	gct	gtc	tcc	cgc	act	caa	cgt	cgg	ggc	agg	act	13431
Thr	Leu	Pro	Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	Arg	Thr	
				240					245					250		
ggc	agg	ggg	aag	cca	ggc	atc	tac	aga	ttt	gtg	gca	ccg	ggg	gag	cgc	13479
Gly	Arg	Gly	Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	Glu	Arg	
			255					260					265			
ccc	tcc	ggc	atg	ttc	gac	tcg	tcc	gtc	ctc	tgt	gag	tgc	tat	gac	gca	13527
Pro	Ser	Gly	Met	Phe	Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	
			270					275					280			
ggc	tgt	gct	tgg	tat	gag	ctc	acg	ccc	gcc	gag	act	aca	gtt	agg	cta	13575
Gly	Cys	Ala	Trp	Tyr	Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	Arg	Leu	

285	290	295	
cga gcg tac atg aac acc ccg ggg ctt ccc gtg tgc cag gac cat ctt			13623
Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu			
300	305	310	315
gaa ttt tgg gag ggc gtc ttt aca ggc ctc act cat ata gat gcc cac			13671
Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile Asp Ala His			
	320	325	330
ttt cta tcc cag aca aag cag agt ggg gag aac ctt cct tac ctg gta			13719
Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val			
	335	340	345
gcg tac caa gcc acc gtg tgc gct agg gct caa gcc cct ccc cca tcg			13767
Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser			
	350	355	360
tgg gac cag atg tgg aag tgt ttg att cgc ctc aag ccc acc ctc cat			13815
Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His			
	365	370	375
ggg cca aca ccc ctg cta tac aga ctg ggc gct gtt cag aat gaa atc			13863
Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile			
380	385	390	395
acc ctg acg cac cca gtc acc aaa tac atc atg aca tgc atg tcg gcc			13911
Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala			
	400	405	410
gac ctg gag gtc gtc acg agc acc tgg gtg ctc gtt ggc ggc gtc ctg			13959
Asp Leu Glu Val Val Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu			
	415	420	425
gct gct ttg gcc gcg tat tgc ctg tca aca ggc tgc gtg gtc ata gtg			14007
Ala Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val			
	430	435	440
ggc agg gtc gtc ttg tcc ggg aag ccg gca atc ata cct gac agg gaa			14055
Gly Arg Val Val Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu			
	445	450	455
gtc ctc tac cga gag ttc gat gag atg gaa gag tgc tct cag cac tta			14103
Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu			
460	465	470	475
ccg tac atc gag caa ggg atg atg ctc gcc gag cag ttc aag cag aag			14151
Pro Tyr Ile Glu Gln Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys			
	480	485	490
gcc ctc ggc ctc ctg cag acc gcg tcc cgt cag gca gag gtt atc gcc			14199
Ala Leu Gly Leu Leu Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala			
	495	500	505
cct gct gtc cag acc aac tgg caa aaa ctc gag acc ttc tgg gcg aag			14247
Pro Ala Val Gln Thr Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys			
	510	515	520

cat atg tgg aac ttc atc agt ggg ata caa tac ttg gcg ggc ttg tca	14295
His Met Trp Asn Phe Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser	
525 530 535	
acg ctg cct ggt aac ccc gcc att gct tca ttg atg gct ttt aca gct	14343
Thr Leu Pro Gly Asn Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala	
540 545 550 555	
gct gtc acc agc cca cta acc act agc caa acc ctc ctc ttc aac ata	14391
Ala Val Thr Ser Pro Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile	
560 565 570	
ttg ggg ggg tgg gtg gct gcc cag ctc gcc gcc ccc ggt gcc gct act	14439
Leu Gly Gly Trp Val Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr	
575 580 585	
gcc ttt gtg ggc gct ggc tta gct ggc gcc gcc atc ggc agt gtt gga	14487
Ala Phe Val Gly Ala Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly	
590 595 600	
ctg ggg aag gtc ctc ata gac atc ctt gca ggg tat ggc gcg ggc gtg	14535
Leu Gly Lys Val Leu Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val	
605 610 615	
gcg gga gct ctt gtg gca ttc aag atc atg agc ggt gag gtc ccc tcc	14583
Ala Gly Ala Leu Val Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser	
620 625 630 635	
acg gag gac ctg gtc aat cta ctg ccc gcc atc ctc tcg ccc gga gcc	14631
Thr Glu Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala	
640 645 650	
ctc gta gtc ggc gtg gtc tgt gca gca ata ctg cgc cgg cac gtt ggc	14679
Leu Val Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg His Val Gly	
655 660 665	
ccg ggc gag ggg gca gtg cag tgg atg aac cgg ctg ata gcc ttc gcc	14727
Pro Gly Glu Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala	
670 675 680	
tcc cgg ggg aac cat gtt tcc ccc acg cac tac gtg ccg gag agc gat	14775
Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp	
685 690 695	
gca gct gcc cgc gtc act gcc ata ctc agc agc ctc act gta acc cag	14823
Ala Ala Ala Arg Val Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln	
700 705 710 715	
ctc ctg agg cga ctg cac cag tgg ata agc tcg gag tgt acc act cca	14871
Leu Leu Arg Arg Leu His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro	
720 725 730	
tgc tcc ggt tcc tgg cta agg gac atc tgg gac tgg ata tgc gag gtg	14919
Cys Ser Gly Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val	
735 740 745	
ttg agc gac ttt aag acc tgg cta aaa gct aag ctc atg cca cag ctg	14967

Leu	Ser	Asp	Phe	Lys	Thr	Trp	Leu	Lys	Ala	Lys	Leu	Met	Pro	Gln	Leu		
		750					755					760					
cct	ggg	atc	ccc	ttt	gtg	tcc	tgc	cag	cgc	ggg	tat	aag	ggg	gtc	tgg	15015	
Pro	Gly	Ile	Pro	Phe	Val	Ser	Cys	Gln	Arg	Gly	Tyr	Lys	Gly	Val	Trp		
	765					770					775						
cga	ggg	gac	ggc	atc	atg	cac	act	cgc	tgc	cac	tgt	gga	gct	gag	atc	15063	
Arg	Gly	Asp	Gly	Ile	Met	His	Thr	Arg	Cys	His	Cys	Gly	Ala	Glu	Ile		
	780				785					790					795		
act	gga	cat	gtc	aaa	aac	ggg	acg	atg	agg	atc	gtc	ggg	cct	agg	acc	15111	
Thr	Gly	His	Val	Lys	Asn	Gly	Thr	Met	Arg	Ile	Val	Gly	Pro	Arg	Thr		
				800					805					810			
tgc	agg	aac	atg	tgg	agt	ggg	acc	ttc	ccc	att	aat	gcc	tac	acc	acg	15159	
Cys	Arg	Asn	Met	Trp	Ser	Gly	Thr	Phe	Pro	Ile	Asn	Ala	Tyr	Thr	Thr		
		815						820					825				
ggc	ccc	tgt	acc	ccc	ctt	cct	gcg	ccg	aac	tac	acg	ttc	gcg	cta	tgg	15207	
Gly	Pro	Cys	Thr	Pro	Leu	Pro	Ala	Pro	Asn	Tyr	Thr	Phe	Ala	Leu	Trp		
	830						835					840					
agg	gtg	tct	gca	gag	gaa	tac	gtg	gag	ata	agg	cag	gtg	ggg	gac	ttc	15255	
Arg	Val	Ser	Ala	Glu	Glu	Tyr	Val	Glu	Ile	Arg	Gln	Val	Gly	Asp	Phe		
	845					850					855						
cac	tac	gtg	acg	ggg	atg	act	act	gac	aac	ctt	aaa	tgc	ccg	tgc	cag	15303	
His	Tyr	Val	Thr	Gly	Met	Thr	Thr	Asp	Asn	Leu	Lys	Cys	Pro	Cys	Gln		
	860				865					870					875		
gtc	cca	tcg	ccc	gaa	ttt	ttc	aca	gaa	ttg	gac	ggg	gtg	cgc	cta	cat	15351	
Val	Pro	Ser	Pro	Glu	Phe	Phe	Thr	Glu	Leu	Asp	Gly	Val	Arg	Leu	His		
			880						885					890			
agg	ttt	gcg	ccc	ccc	tgc	aag	ccc	ttg	ctg	cgg	gag	gag	gta	tca	ttc	15399	
Arg	Phe	Ala	Pro	Pro	Cys	Lys	Pro	Leu	Leu	Arg	Glu	Glu	Val	Ser	Phe		
		895						900					905				
aga	gta	gga	ctc	cac	gaa	tac	ccg	gta	ggg	tcg	caa	tta	cct	tgc	gag	15447	
Arg	Val	Gly	Leu	His	Glu	Tyr	Pro	Val	Gly	Ser	Gln	Leu	Pro	Cys	Glu		
	910						915					920					
ccc	gaa	ccg	gac	gtg	gcc	gtg	ttg	acg	tcc	atg	ctc	act	gat	ccc	tcc	15495	
Pro	Glu	Pro	Asp	Val	Ala	Val	Leu	Thr	Ser	Met	Leu	Thr	Asp	Pro	Ser		
	925					930					935						
cat	ata	aca	gca	gag	gcg	gcc	ggg	cga	agg	ttg	gcg	agg	gga	tca	ccc	15543	
His	Ile	Thr	Ala	Glu	Ala	Ala	Gly	Arg	Arg	Leu	Ala	Arg	Gly	Ser	Pro		
	940				945					950					955		
ccc	tct	gtg	gcc	agc	tcc	tcg	gct	agc	cag	cta	tcc	gct	cca	tct	ctc	15591	
Pro	Ser	Val	Ala	Ser	Ser	Ser	Ala	Ser	Gln	Leu	Ser	Ala	Pro	Ser	Leu		
				960					965					970			
aag	gca	act	tgc	acc	gct	aac	cat	gac	tcc	cct	gat	gct	gag	ctc	ata	15639	
Lys	Ala	Thr	Cys	Thr	Ala	Asn	His	Asp	Ser	Pro	Asp	Ala	Glu	Leu	Ile		

975	980	985	
gag gcc aac ctc cta tgg agg	cag gag atg ggc ggc aac atc acc agg		15687
Glu Ala Asn Leu Leu Trp Arg	Gln Glu Met Gly Gly Asn Ile Thr Arg		
990	995	1000	
gtt gag tca gaa aac aaa gtg gtg att ctg gac tcc ttc gat ccg ctt			15735
Val Glu Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu			
1005	1010	1015	
gtg gcg gag gag gac gag cgg gag atc tcc gta ccc gca gaa atc ctg			15783
Val Ala Glu Glu Asp Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu			
1020	1025	1030	1035
cgg aag tct cgg aga ttc gcc cag gcc ctg ccc gtt tgg gcg cgg ccg			15831
Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro			
1040	1045	1050	
gac tat aac ccc ccg cta gtg gag acg tgg aaa aag ccc gac tac gaa			15879
Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu			
1055	1060	1065	
cca cct gtg gtc cat ggc tgc ccg ctt cca cct cca aag tcc cct cct			15927
Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro			
1070	1075	1080	
gtg cct ccg cct cgg aag aag cgg acg gtg gtc ctc act gaa tca acc			15975
Val Pro Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr			
1085	1090	1095	
cta tct act gcc ttg gcc gag ctc gcc acc aga agc ttt ggc agc tcc			16023
Leu Ser Thr Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser			
1100	1105	1110	1115
tca act tcc ggc att acg ggc gac aat acg aca aca tcc tct gag ccc			16071
Ser Thr Ser Gly Ile Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro			
1120	1125	1130	
gcc cct tct ggc tgc ccc ccc gac tcc gac gct gag tcc tat tcc tcc			16119
Ala Pro Ser Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser			
1135	1140	1145	
atg ccc ccc ctg gag ggg gag cct ggg gat ccg gat ctt agc gac ggg			16167
Met Pro Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly			
1150	1155	1160	
tca tgg tca acg gtc agt agt gag gcc aac gcg gag gat gtc gtg tgc			16215
Ser Trp Ser Thr Val Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys			
1165	1170	1175	
tgc tca atg tct tac tct tgg aca ggc gca ctc gtc acc ccg tgc gcc			16263
Cys Ser Met Ser Tyr Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala			
1180	1185	1190	1195
gcg gaa gaa cag aaa ctg ccc atc aat gca cta agc aac tcg ttg cta			16311
Ala Glu Glu Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu			
1200	1205	1210	

cg	t	c	a	c	a	a	t	t	g	g	t	a	t	t	c	c	a	c	c	t	c	a	c	g	a	g	t	g	c	a		16359	
Arg	His	His	Asn	Leu	Val	Tyr	Ser	Thr	Thr	Ser	Arg	Ser	Ala	Cys	Gln																		
			1215							1220					1225																		
agg	cag	aag	aaa	gtc	aca	ttt	gac	aga	ctg	caa	gtt	ctg	gac	agc	cat																	16407	
Arg	Gln	Lys	Lys	Val	Thr	Phe	Asp	Arg	Leu	Gln	Val	Leu	Asp	Ser	His																		
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tac	cag	gac	gta	ctc	aag	gag	gtt	aaa	gca	gcg	gcg	tca	aaa	gtg	aag																	16455	
Tyr	Gln	Asp	Val	Leu	Lys	Glu	Val	Lys	Ala	Ala	Ala	Ser	Lys	Val	Lys																		
		1245					1250					1255																					
gct	aac	ttg	cta	tcc	gta	gag	gaa	gct	tgc	agc	ctg	acg	ccc	cca	cac																	16503	
Ala	Asn	Leu	Leu	Ser	Val	Glu	Glu	Ala	Cys	Ser	Leu	Thr	Pro	Pro	His																		
		1260					1265					1270				1275																	
tca	gcc	aaa	tcc	aag	ttt	ggg	tat	ggg	gca	aaa	gac	gtc	cgt	tgc	cat																	16551	
Ser	Ala	Lys	Ser	Lys	Phe	Gly	Tyr	Gly	Ala	Lys	Asp	Val	Arg	Cys	His																		
			1280						1285						1290																		
gcc	aga	aag	gcc	gta	acc	cac	atc	aac	tcc	gtg	tgg	aaa	gac	ctt	ctg																	16599	
Ala	Arg	Lys	Ala	Val	Thr	His	Ile	Asn	Ser	Val	Trp	Lys	Asp	Leu	Leu																		
			1295						1300					1305																			
gaa	gac	aat	gta	aca	cca	ata	gac	act	acc	atc	atg	gct	aag	aac	gag																	16647	
Glu	Asp	Asn	Val	Thr	Pro	Ile	Asp	Thr	Thr	Ile	Met	Ala	Lys	Asn	Glu																		
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gtt	ttc	tgc	gtt	cag	cct	gag	aag	ggg	ggg	cgt	aag	cca	gct	cgt	ctc																	16695	
Val	Phe	Cys	Val	Gln	Pro	Glu	Lys	Gly	Gly	Arg	Lys	Pro	Ala	Arg	Leu																		
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atc	gtg	ttc	ccc	gat	ctg	ggc	gtg	cgc	gtg	tgc	gaa	aag	atg	gct	ttg																	16743	
Ile	Val	Phe	Pro	Asp	Leu	Gly	Val	Arg	Val	Cys	Glu	Lys	Met	Ala	Leu																		
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tac	gac	gtg	gtt	aca	aag	ctc	ccc	ttg	gcc	gtg	atg	gga	agc	tcc	tac																	16791	
Tyr	Asp	Val	Val	Thr	Lys	Leu	Pro	Leu	Ala	Val	Met	Gly	Ser	Ser	Tyr																		
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Gly	Phe	Gln	Tyr	Ser	Pro	Gly	Gln	Arg	Val	Glu	Phe	Leu	Val	Gln	Ala																		
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Trp	Lys	Ser	Lys	Lys	Thr	Pro	Met	Gly	Phe	Ser	Tyr	Asp	Thr	Arg	Cys																		
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ttt	gac	tcc	aca	gtc	act	gag	agc	gac	atc	cgt	acg	gag	gag	gca	atc																	16935	
Phe	Asp	Ser	Thr	Val	Thr	Glu	Ser	Asp	Ile	Arg	Thr	Glu	Glu	Ala	Ile																		
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Tyr	Gln	Cys	Cys	Asp	Leu	Asp	Pro	Gln	Ala	Arg	Val	Ala	Ile	Lys	Ser																		
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ctc	acc	gag	agg	ctt	tat	gtt	ggg	ggc	cct	ctt	acc	aat	tca	agg	ggg																	17031	

Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly	
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Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr	
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agc tgt ggt aac acc ctc act tgc tac atc aag gcc cgg gca gcc tgt	17127
Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys	
1470 1475 1480	
cga gcc gca ggg ctc cag gac tgc acc atg ctc gtg tgt ggc gac gac	17175
Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp	
1485 1490 1495	
tta gtc gtt atc tgt gaa agc gcg ggg gtc cag gag gac gcg gcg agc	17223
Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser	
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ctg aga gcc ttc acg gag gct atg acc agg tac tcc gcc ccc cct ggg	17271
Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly	
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gac ccc cca caa cca gaa tac gac ttg gag ctc ata aca tca tgc tcc	17319
Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser	
1535 1540 1545	
tcc aac gtg tca gtc gcc cac gac ggc gct gga aag agg gtc tac tac	17367
Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr	
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ctc acc cgt gac cct aca acc ccc ctc gcg aga gct gcg tgg gag aca	17415
Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr	
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gca aga cac act cca gtc aat tcc tgg cta ggc aac ata atc atg ttt	17463
Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe	
1580 1585 1590 1595	
gcc ccc aca ctg tgg gcg agg atg ata ctg atg acc cat ttc ttt agc	17511
Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser	
1600 1605 1610	
gtc ctt ata gcc agg gac cag ctt gaa cag gcc ctc gat tgc gag atc	17559
Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile	
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tac ggg gcc tgc tac tcc ata gaa cca ctg gat cta cct cca atc att	17607
Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile	
1630 1635 1640	
caa aga ctc cat ggc ctc agc gca ttt tca ctc cac agt tac tct cca	17655
Gln Arg Leu His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro	
1645 1650 1655	
ggt gaa atc aat agg gtg gcc gca tgc ctc aga aaa ctt ggg gta ccg	17703
Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro	

1660	1665	1670	1675	
ccc ttg cga gct tgg aga cac cgg gcc cgg agc gtc cgc gct agg ctt				17751
Pro Leu Arg Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu				
1680		1685	1690	
ctg gcc aga gga ggc agg gct gcc ata tgt ggc aag tac ctc ttc aac				17799
Leu Ala Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn				
1695		1700	1705	
tgg gca gta aga aca aag ctc aaa ctc act cca ata gcg gcc gct ggc				17847
Trp Ala Val Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly				
1710		1715	1720	
cag ctg gac ttg tcc ggc tgg ttc acg gct ggc tac agc ggg gga gac				17895
Gln Leu Asp Leu Ser Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp				
1725		1730	1735	
att tat cac agc gtg tct cat gcc cgg ccc cgc tgg atc tgg ttt tgc				17943
Ile Tyr His Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys				
1740		1745	1750	1755
cta ctc ctg ctt gct gca ggg gta ggc atc tac ctc ctc ccc aac cga				17991
Leu Leu Leu Leu Ala Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg				
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atg agc acg aat cct aaa cct caa aga aag acc aaa cgt aac acc aac				18039
Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn				
1775		1780	1785	
cgg cgg ccg cag gac gtc aag ttc ccg ggt ggc ggt cag atc gtt ggt				18087
Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly				
1790		1795	1800	
gga gtt tac ttg ttg ccg cgc agg ggc cct aga ttg ggt gtg cgc gcg				18135
Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala				
1805		1810	1815	
acg aga aag act tcc gag cgg tcg caa cct cga ggt aga cgt cag cct				18183
Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro				
1820		1825	1830	1835
atc ccc aag gct cgt cgg ccc gag ggc agg acc tgg gct cag ccc ggg				18231
Ile Pro Lys Ala Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly				
1840		1845	1850	
tac cct tgg ccc ctc tat ggc aat gag ggc tgc ggg tgg gcg gga tgg				18279
Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp				
1855		1860	1865	
ctc ctg tct ccc cgt ggc tct cgg cct agc tgg ggc ccc aca gac ccc				18327
Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro				
1870		1875	1880	
cgg cgt agg tcg cgc aat ttg ggt aag gtc atc gat acc ctt acg tgc				18375
Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys				
1885		1890	1895	

ggc ttc gcc gac ctc atg ggg tac ata ccg ctc gtc taatagtcga 18421
 Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val
 1900 1905 1910

ctttgttccc actgtacttt tagctcgtac aaaatacaat atacttttca tttctccgta 18481
 aacaacatgt tttcccatgt aatatacctt tctatttttc gttccgttac caactttaca 18541
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 <213> Artificial Sequence

<220>
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 pd.delta.NS3NS5.pj.core140

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 Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His
 20 25 30
 Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
 35 40 45
 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 50 55 60
 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 65 70 75 80
 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
 85 90 95
 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
 100 105 110
 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
 115 120 125
 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
 130 135 140
 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
 145 150 155 160
 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
 165 170 175
 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
 180 185 190
 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
 195 200 205

Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	Val	Thr	Gln	Thr	Val	Asp	Phe	210	215	220
Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	Thr	Ile	Thr	Leu	Pro	Gln	Asp	225	230	235
Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	Arg	Thr	Gly	Arg	Gly	Lys	Pro	245	250	255
Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	Glu	Arg	Pro	Ser	Gly	Met	Phe	260	265	270
Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	Asp	Ala	Gly	Cys	Ala	Trp	Tyr	275	280	285
Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	Arg	Leu	Arg	Ala	Tyr	Met	Asn	290	295	300
Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	His	Leu	Glu	Phe	Trp	Glu	Gly	305	310	315
Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	Ala	His	Phe	Leu	Ser	Gln	Thr	325	330	335
Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr	Leu	Val	Ala	Tyr	Gln	Ala	Thr	340	345	350
Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser	Trp	Asp	Gln	Met	Trp	355	360	365
Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His	Gly	Pro	Thr	Pro	Leu	370	375	380
Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Ile	Thr	Leu	Thr	His	Pro	385	390	395
Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	Ser	Ala	Asp	Leu	Glu	Val	Val	405	410	415
Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu	Ala	Ala	Leu	Ala	Ala	420	425	430
Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val	Ile	Val	Gly	Arg	Val	Val	Leu	435	440	445
Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp	Arg	Glu	Val	Leu	Tyr	Arg	Glu	450	455	460
Phe	Asp	Glu	Met	Glu	Glu	Cys	Ser	Gln	His	Leu	Pro	Tyr	Ile	Glu	Gln	465	470	475
Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	Ala	Leu	Gly	Leu	Leu	485	490	495
Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	Ile	Ala	Pro	Ala	Val	Gln	Thr	500	505	510

Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys	His	Met	Trp	Asn	Phe	515	520	525
Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser	Thr	Leu	Pro	Gly	Asn	530	535	540
Pro	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala	Ala	Val	Thr	Ser	Pro	545	550	555
Leu	Thr	Thr	Ser	Gln	Thr	Leu	Leu	Phe	Asn	Ile	Leu	Gly	Gly	Trp	Val	565	570	575
Ala	Ala	Gln	Leu	Ala	Ala	Pro	Gly	Ala	Ala	Thr	Ala	Phe	Val	Gly	Ala	580	585	590
Gly	Leu	Ala	Gly	Ala	Ala	Ile	Gly	Ser	Val	Gly	Leu	Gly	Lys	Val	Leu	595	600	605
Ile	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val	Ala	Gly	Ala	Leu	Val	610	615	620
Ala	Phe	Lys	Ile	Met	Ser	Gly	Glu	Val	Pro	Ser	Thr	Glu	Asp	Leu	Val	625	630	635
Asn	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	Leu	Val	Val	Gly	Val	645	650	655
Val	Cys	Ala	Ala	Ile	Leu	Arg	Arg	His	Val	Gly	Pro	Gly	Glu	Gly	Ala	660	665	670
Val	Gln	Trp	Met	Asn	Arg	Leu	Ile	Ala	Phe	Ala	Ser	Arg	Gly	Asn	His	675	680	685
Val	Ser	Pro	Thr	His	Tyr	Val	Pro	Glu	Ser	Asp	Ala	Ala	Ala	Arg	Val	690	695	700
Thr	Ala	Ile	Leu	Ser	Ser	Leu	Thr	Val	Thr	Gln	Leu	Leu	Arg	Arg	Leu	705	710	715
His	Gln	Trp	Ile	Ser	Ser	Glu	Cys	Thr	Thr	Pro	Cys	Ser	Gly	Ser	Trp	725	730	735
Leu	Arg	Asp	Ile	Trp	Asp	Trp	Ile	Cys	Glu	Val	Leu	Ser	Asp	Phe	Lys	740	745	750
Thr	Trp	Leu	Lys	Ala	Lys	Leu	Met	Pro	Gln	Leu	Pro	Gly	Ile	Pro	Phe	755	760	765
Val	Ser	Cys	Gln	Arg	Gly	Tyr	Lys	Gly	Val	Trp	Arg	Gly	Asp	Gly	Ile	770	775	780
Met	His	Thr	Arg	Cys	His	Cys	Gly	Ala	Glu	Ile	Thr	Gly	His	Val	Lys	785	790	795
Asn	Gly	Thr	Met	Arg	Ile	Val	Gly	Pro	Arg	Thr	Cys	Arg	Asn	Met	Trp	805	810	815

Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro
 820 825 830
 Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu
 835 840 845
 Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly
 850 855 860
 Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
 865 870 875 880
 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
 885 890 895
 Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His
 900 905 910
 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val
 915 920 925
 Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu
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 Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser
 945 950 955 960
 Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr
 965 970 975
 Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu
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 Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn
 995 1000 1005
 Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp
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 Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Pro Arg
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 Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu
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 Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Ser Thr Ser Gly Ile
 1105 1110 1115 1120

Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys
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 Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu
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 Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr
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 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys
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 Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu
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 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu
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 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser
 1250 1255 1260
 Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys
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 Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val
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 Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr
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 Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln
 1315 1320 1325
 Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp
 1330 1335 1340
 Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr
 1345 1350 1355 1360
 Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser
 1365 1370 1375
 Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys
 1380 1385 1390
 Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val
 1395 1400 1405
 Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys Cys Asp
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Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
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 Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
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 Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
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 ctgatctcct ctgccgaac accgggcac tccaacttat aagttggaga aataagagaa 12240
 tttcagattg agagaatgaa aaaaaaaaaac ccttagttca taggtccatt ctcttagcgc 12300
 aactacagag aacaggggca caaacaggca aaaaacgggc acaacctcaa tggagtgatg 12360

acc agc ggc gat gtt gtc gtc gtg gca acc gat gcc ctc atg acc ggc	13287
Thr Ser Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met Thr Gly	
190 195 200	
tat acc ggc gac ttc gac tcg gtg ata gac tgc aat acg tgt gtc acc	13335
Tyr Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr	
205 210 215	
cag aca gtc gat ttc agc ctt gac cct acc ttc acc att gag aca atc	13383
Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile	
220 225 230 235	
acg ctc ccc caa gat gct gtc tcc cgc act caa cgt cgg ggc agg act	13431
Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr	
240 245 250	
ggc agg ggg aag cca ggc atc tac aga ttt gtg gca ccg ggg gag cgc	13479
Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg	
255 260 265	
ccc tcc ggc atg ttc gac tcg tcc gtc ctc tgt gag tgc tat gac gca	13527
Pro Ser Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala	
270 275 280	
ggc tgt gct tgg tat gag ctc acg ccc gcc gag act aca gtt agg cta	13575
Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu	
285 290 295	
cga gcg tac atg aac acc ccg ggg ctt ccc gtg tgc cag gac cat ctt	13623
Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu	
300 305 310 315	
gaa ttt tgg gag ggc gtc ttt aca ggc ctc act cat ata gat gcc cac	13671
Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile Asp Ala His	
320 325 330	
ttt cta tcc cag aca aag cag agt ggg gag aac ctt cct tac ctg gta	13719
Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val	
335 340 345	
gcg tac caa gcc acc gtg tgc gct agg gct caa gcc cct ccc cca tcg	13767
Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser	
350 355 360	
tgg gac cag atg tgg aag tgt ttg att cgc ctc aag ccc acc ctc cat	13815
Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His	
365 370 375	
ggg cca aca ccc ctg cta tac aga ctg ggc gct gtt cag aat gaa atc	13863
Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile	
380 385 390 395	
acc ctg acg cac cca gtc acc aaa tac atc atg aca tgc atg tcg gcc	13911
Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala	
400 405 410	
gac ctg gag gtc gtc acg agc acc tgg gtg ctc gtt ggc ggc gtc ctg	13959

Asp	Leu	Glu	Val	Val	Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu	
			415					420					425			
gct	gct	ttg	gcc	gcg	tat	tgc	ctg	tca	aca	ggc	tgc	gtg	gtc	ata	gtg	14007
Ala	Ala	Leu	Ala	Ala	Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val	Ile	Val	
		430					435					440				
ggc	agg	gtc	gtc	ttg	tcc	ggg	aag	ccg	gca	atc	ata	cct	gac	agg	gaa	14055
Gly	Arg	Val	Val	Leu	Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp	Arg	Glu	
	445					450					455					
gtc	ctc	tac	cga	gag	ttc	gat	gag	atg	gaa	gag	tgc	tct	cag	cac	tta	14103
Val	Leu	Tyr	Arg	Glu	Phe	Asp	Glu	Met	Glu	Glu	Cys	Ser	Gln	His	Leu	
460					465				470						475	
ccg	tac	atc	gag	caa	ggg	atg	atg	ctc	gcc	gag	cag	ttc	aag	cag	aag	14151
Pro	Tyr	Ile	Glu	Gln	Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	
			480					485						490		
gcc	ctc	ggc	ctc	ctg	cag	acc	gcg	tcc	cgt	cag	gca	gag	gtt	atc	gcc	14199
Ala	Leu	Gly	Leu	Leu	Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	Ile	Ala	
		495					500					505				
cct	gct	gtc	cag	acc	aac	tgg	caa	aaa	ctc	gag	acc	ttc	tgg	gcg	aag	14247
Pro	Ala	Val	Gln	Thr	Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys	
	510					515						520				
cat	atg	tgg	aac	ttc	atc	agt	ggg	ata	caa	tac	ttg	gcg	ggc	ttg	tca	14295
His	Met	Trp	Asn	Phe	Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser	
	525					530				535						
acg	ctg	cct	ggt	aac	ccc	gcc	att	gct	tca	ttg	atg	gct	ttt	aca	gct	14343
Thr	Leu	Pro	Gly	Asn	Pro	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala	
540				545				550							555	
gct	gtc	acc	agc	cca	cta	acc	act	agc	caa	acc	ctc	ctc	ttc	aac	ata	14391
Ala	Val	Thr	Ser	Pro	Leu	Thr	Thr	Ser	Gln	Thr	Leu	Leu	Phe	Asn	Ile	
			560					565						570		
ttg	ggg	ggg	tgg	gtg	gct	gcc	cag	ctc	gcc	gcc	ccc	ggt	gcc	gct	act	14439
Leu	Gly	Gly	Trp	Val	Ala	Ala	Gln	Leu	Ala	Ala	Pro	Gly	Ala	Ala	Thr	
		575					580					585				
gcc	ttt	gtg	ggc	gct	ggc	tta	gct	ggc	gcc	gcc	atc	ggc	agt	gtt	gga	14487
Ala	Phe	Val	Gly	Ala	Gly	Leu	Ala	Gly	Ala	Ala	Ile	Gly	Ser	Val	Gly	
	590					595					600					
ctg	ggg	aag	gtc	ctc	ata	gac	atc	ctt	gca	ggg	tat	ggc	gcg	ggc	gtg	14535
Leu	Gly	Lys	Val	Leu	Ile	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val	
	605					610				615						
gcg	gga	gct	ctt	gtg	gca	ttc	aag	atc	atg	agc	ggt	gag	gtc	ccc	tcc	14583
Ala	Gly	Ala	Leu	Val	Ala	Phe	Lys	Ile	Met	Ser	Gly	Glu	Val	Pro	Ser	
620				625				630							635	
acg	gag	gac	ctg	gtc	aat	cta	ctg	ccc	gcc	atc	ctc	tcg	ccc	gga	gcc	14631
Thr	Glu	Asp	Leu	Val	Asn	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	

640										645					650					
ctc	gta	gtc	ggc	gtg	gtc	tgt	gca	gca	ata	ctg	cgc	cgg	cac	gtt	ggc	14679				
Leu	Val	Val	Gly	Val	Val	Cys	Ala	Ala	Ile	Leu	Arg	Arg	His	Val	Gly					
			655				660						665							
ccg	ggc	gag	ggg	gca	gtg	cag	tgg	atg	aac	cgg	ctg	ata	gcc	ttc	gcc	14727				
Pro	Gly	Glu	Gly	Ala	Val	Gln	Trp	Met	Asn	Arg	Leu	Ile	Ala	Phe	Ala					
			670				675						680							
tcc	cgg	ggg	aac	cat	gtt	tcc	ccc	acg	cac	tac	gtg	ccg	gag	agc	gat	14775				
Ser	Arg	Gly	Asn	His	Val	Ser	Pro	Thr	His	Tyr	Val	Pro	Glu	Ser	Asp					
			685				690						695							
gca	gct	gcc	cgc	gtc	act	gcc	ata	ctc	agc	agc	ctc	act	gta	acc	cag	14823				
Ala	Ala	Ala	Arg	Val	Thr	Ala	Ile	Leu	Ser	Ser	Leu	Thr	Val	Thr	Gln					
700				705						710			715							
ctc	ctg	agg	cga	ctg	cac	cag	tgg	ata	agc	tcg	gag	tgt	acc	act	cca	14871				
Leu	Leu	Arg	Arg	Leu	His	Gln	Trp	Ile	Ser	Ser	Glu	Cys	Thr	Thr	Pro					
			720						725			730								
tgc	tcc	ggt	tcc	tgg	cta	agg	gac	atc	tgg	gac	tgg	ata	tgc	gag	gtg	14919				
Cys	Ser	Gly	Ser	Trp	Leu	Arg	Asp	Ile	Trp	Asp	Trp	Ile	Cys	Glu	Val					
			735						740			745								
ttg	agc	gac	ttt	aag	acc	tgg	cta	aaa	gct	aag	ctc	atg	cca	cag	ctg	14967				
Leu	Ser	Asp	Phe	Lys	Thr	Trp	Leu	Lys	Ala	Lys	Leu	Met	Pro	Gln	Leu					
			750			755						760								
cct	ggg	atc	ccc	ttt	gtg	tcc	tgc	cag	cgc	ggg	tat	aag	ggg	gtc	tgg	15015				
Pro	Gly	Ile	Pro	Phe	Val	Ser	Cys	Gln	Arg	Gly	Tyr	Lys	Gly	Val	Trp					
			765			770						775								
cga	ggg	gac	ggc	atc	atg	cac	act	cgc	tgc	cac	tgt	gga	gct	gag	atc	15063				
Arg	Gly	Asp	Gly	Ile	Met	His	Thr	Arg	Cys	His	Cys	Gly	Ala	Glu	Ile					
780				785						790			795							
act	gga	cat	gtc	aaa	aac	ggg	acg	atg	agg	atc	gtc	ggt	cct	agg	acc	15111				
Thr	Gly	His	Val	Lys	Asn	Gly	Thr	Met	Arg	Ile	Val	Gly	Pro	Arg	Thr					
			800						805			810								
tgc	agg	aac	atg	tgg	agt	ggg	acc	ttc	ccc	att	aat	gcc	tac	acc	acg	15159				
Cys	Arg	Asn	Met	Trp	Ser	Gly	Thr	Phe	Pro	Ile	Asn	Ala	Tyr	Thr	Thr					
			815						820			825								
ggc	ccc	tgt	acc	ccc	ctt	cct	gcg	ccg	aac	tac	acg	ttc	gcg	cta	tgg	15207				
Gly	Pro	Cys	Thr	Pro	Leu	Pro	Ala	Pro	Asn	Tyr	Thr	Phe	Ala	Leu	Trp					
			830			835						840								
agg	gtg	tct	gca	gag	gaa	tac	gtg	gag	ata	agg	cag	gtg	ggg	gac	ttc	15255				
Arg	Val	Ser	Ala	Glu	Glu	Tyr	Val	Glu	Ile	Arg	Gln	Val	Gly	Asp	Phe					
			845			850						855								
cac	tac	gtg	acg	ggt	atg	act	act	gac	aat	ctt	aaa	tgc	ccg	tgc	cag	15303				
His	Tyr	Val	Thr	Gly	Met	Thr	Thr	Asp	Asn	Leu	Lys	Cys	Pro	Cys	Gln					
860				865						870			875							

gtc cca tcg ccc gaa ttt ttc aca gaa ttg gac ggg gtg cgc cta cat	15351
Val Pro Ser Pro Glu Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His	
880 885 890	
agg ttt gcg ccc ccc tgc aag ccc ttg ctg cgg gag gag gta tca ttc	15399
Arg Phe Ala Pro Pro Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe	
895 900 905	
aga gta gga ctc cac gaa tac ccg gta ggg tcg caa tta cct tgc gag	15447
Arg Val Gly Leu His Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu	
910 915 920	
ccc gaa ccg gac gtg gcc gtg ttg acg tcc atg ctc act gat ccc tcc	15495
Pro Glu Pro Asp Val Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser	
925 930 935	
cat ata aca gca gag gcg gcc ggg cga agg ttg gcg agg gga tca ccc	15543
His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro	
940 945 950 955	
ccc tct gtg gcc agc tcc tcg gct agc cag cta tcc gct cca tct ctc	15591
Pro Ser Val Ala Ser Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu	
960 965 970	
aag gca act tgc acc gct aac cat gac tcc cct gat gct gag ctc ata	15639
Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile	
975 980 985	
gag gcc aac ctc cta tgg agg cag gag atg ggc ggc aac atc acc agg	15687
Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg	
990 995 1000	
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Val Glu Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu	
1005 1010 1015	
gtg gcg gag gag gac gag ccg gag atc tcc gta ccc gca gaa atc ctg	15783
Val Ala Glu Glu Asp Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu	
1020 1025 1030 1035	
ccg aag tct ccg aga ttc gcc cag gcc ctg ccc gtt tgg gcg ccg ccg	15831
Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro	
1040 1045 1050	
gac tat aac ccc ccg cta gtg gag acg tgg aaa aag ccc gac tac gaa	15879
Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu	
1055 1060 1065	
cca cct gtg gtc cat ggc tgc ccg ctt cca cct cca aag tcc cct cct	15927
Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro	
1070 1075 1080	
gtg cct ccg cct ccg aag aag ccg acg gtg gtc ctc act gaa tca acc	15975
Val Pro Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr	
1085 1090 1095	
cta tct act gcc ttg gcc gag ctc gcc acc aga agc ttt ggc agc tcc	16023

Leu	Ser	Thr	Ala	Leu	Ala	Glu	Leu	Ala	Thr	Arg	Ser	Phe	Gly	Ser	Ser	
1100					1105					1110					1115	
tca	act	tcc	ggc	att	acg	ggc	gac	aat	acg	aca	aca	tcc	tct	gag	ccc	16071
Ser	Thr	Ser	Gly	Ile	Thr	Gly	Asp	Asn	Thr	Thr	Thr	Ser	Ser	Glu	Pro	
			1120					1125						1130		
gcc	cct	tct	ggc	tgc	ccc	ccc	gac	tcc	gac	gct	gag	tcc	tat	tcc	tcc	16119
Ala	Pro	Ser	Gly	Cys	Pro	Pro	Asp	Ser	Asp	Ala	Glu	Ser	Tyr	Ser	Ser	
			1135					1140					1145			
atg	ccc	ccc	ctg	gag	ggg	gag	cct	ggg	gat	ccg	gat	ctt	agc	gac	ggg	16167
Met	Pro	Pro	Leu	Glu	Gly	Glu	Pro	Gly	Asp	Pro	Asp	Leu	Ser	Asp	Gly	
		1150					1155					1160				
tca	tgg	tca	acg	gtc	agt	agt	gag	gcc	aac	gcg	gag	gat	gtc	gtg	tgc	16215
Ser	Trp	Ser	Thr	Val	Ser	Ser	Glu	Ala	Asn	Ala	Glu	Asp	Val	Val	Cys	
	1165					1170					1175					
tgc	tca	atg	tct	tac	tct	tgg	aca	ggc	gca	ctc	gtc	acc	ccg	tgc	gcc	16263
Cys	Ser	Met	Ser	Tyr	Ser	Trp	Thr	Gly	Ala	Leu	Val	Thr	Pro	Cys	Ala	
1180				1185					1190						1195	
gcg	gaa	gaa	cag	aaa	ctg	ccc	atc	aat	gca	cta	agc	aac	tcg	ttg	cta	16311
Ala	Glu	Glu	Gln	Lys	Leu	Pro	Ile	Asn	Ala	Leu	Ser	Asn	Ser	Leu	Leu	
			1200					1205						1210		
cgt	cac	cac	aat	ttg	gtg	tat	tcc	acc	acc	tca	cgc	agt	gct	tgc	caa	16359
Arg	His	His	Asn	Leu	Val	Tyr	Ser	Thr	Thr	Ser	Arg	Ser	Ala	Cys	Gln	
			1215				1220						1225			
agg	cag	aag	aaa	gtc	aca	ttt	gac	aga	ctg	caa	gtt	ctg	gac	agc	cat	16407
Arg	Gln	Lys	Lys	Val	Thr	Phe	Asp	Arg	Leu	Gln	Val	Leu	Asp	Ser	His	
		1230					1235					1240				
tac	cag	gac	gta	ctc	aag	gag	gtt	aaa	gca	gcg	gcg	tca	aaa	gtg	aag	16455
Tyr	Gln	Asp	Val	Leu	Lys	Glu	Val	Lys	Ala	Ala	Ala	Ser	Lys	Val	Lys	
	1245				1250					1255						
gct	aac	ttg	cta	tcc	gta	gag	gaa	gct	tgc	agc	ctg	acg	ccc	cca	cac	16503
Ala	Asn	Leu	Leu	Ser	Val	Glu	Glu	Ala	Cys	Ser	Leu	Thr	Pro	Pro	His	
1260				1265				1270							1275	
tca	gcc	aaa	tcc	aag	ttt	ggg	tat	ggg	gca	aaa	gac	gtc	cgt	tgc	cat	16551
Ser	Ala	Lys	Ser	Lys	Phe	Gly	Tyr	Gly	Ala	Lys	Asp	Val	Arg	Cys	His	
			1280					1285						1290		
gcc	aga	aag	gcc	gta	acc	cac	atc	aac	tcc	gtg	tgg	aaa	gac	ctt	ctg	16599
Ala	Arg	Lys	Ala	Val	Thr	His	Ile	Asn	Ser	Val	Trp	Lys	Asp	Leu	Leu	
		1295						1300					1305			
gaa	gac	aat	gta	aca	cca	ata	gac	act	acc	atc	atg	gct	aag	aac	gag	16647
Glu																

1325	1330	1335	
atc gtg ttc ccc gat ctg ggc gtg cgc gtg tgc gaa aag atg gct ttg			16743
Ile Val Phe Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu			
1340	1345	1350	1355
tac gac gtg gtt aca aag ctc ccc ttg gcc gtg atg gga agc tcc tac			16791
Tyr Asp Val Val Thr Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr			
	1360	1365	1370
gga ttc caa tac tca cca gga cag cgg gtt gaa ttc ctc gtg caa gcg			16839
Gly Phe Gln Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala			
	1375	1380	1385
tgg aag tcc aag aaa acc cca atg ggg ttc tgc tat gat acc cgc tgc			16887
Trp Lys Ser Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys			
	1390	1395	1400
ttt gac tcc aca gtc act gag agc gac atc cgt acg gag gag gca atc			16935
Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile			
	1405	1410	1415
tac caa tgt tgt gac ctc gac ccc caa gcc cgc gtg gcc atc aag tcc			16983
Tyr Gln Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser			
1420	1425	1430	1435
ctc acc gag agg ctt tat gtt ggg ggc cct ctt acc aat tca agg ggg			17031
Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly			
	1440	1445	1450
gag aac tgc ggc tat cgc agg tgc cgc gcg agc ggc gta ctg aca act			17079
Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr			
	1455	1460	1465
agc tgt ggt aac acc ctc act tgc tac atc aag gcc cgg gca gcc tgt			17127
Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys			
	1470	1475	1480
cga gcc gca ggg ctc cag gac tgc acc atg ctc gtg tgt ggc gac gac			17175
Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp			
	1485	1490	1495
tta gtc gtt atc tgt gaa agc gcg ggg gtc cag gag gac gcg gcg agc			17223
Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser			
1500	1505	1510	1515
ctg aga gcc ttc acg gag gct atg acc agg tac tcc gcc ccc cct ggg			17271
Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly			
	1520	1525	1530
gac ccc cca caa cca gaa tac gac ttg gag ctc ata aca tca tgc tcc			17319
Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser			
	1535	1540	1545
tcc aac gtg tca gtc gcc cac gac ggc gct gga aag agg gtc tac tac			17367
Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr			
	1550	1555	1560

ctc acc cgt gac cct aca acc ccc ctc gcg aga gct gcg tgg gag aca	17415
Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr	
1565 1570 1575	
gca aga cac act cca gtc aat tcc tgg cta ggc aac ata atc atg ttt	17463
Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe	
1580 1585 1590 1595	
gcc ccc aca ctg tgg gcg agg atg ata ctg atg acc cat ttc ttt agc	17511
Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser	
1600 1605 1610	
gtc ctt ata gcc agg gac cag ctt gaa cag gcc ctc gat tgc gag atc	17559
Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile	
1615 1620 1625	
tac ggg gcc tgc tac tcc ata gaa cca ctg gat cta cct cca atc att	17607
Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile	
1630 1635 1640	
caa aga ctc cat ggc ctc agc gca ttt tca ctc cac agt tac tct cca	17655
Gln Arg Leu His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro	
1645 1650 1655	
ggc gaa atc aat agg gtg gcc gca tgc ctc aga aaa ctt ggg gta ccg	17703
Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro	
1660 1665 1670 1675	
ccc ttg cga gct tgg aga cac cgg gcc cgg agc gtc cgc gct agg ctt	17751
Pro Leu Arg Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu	
1680 1685 1690	
ctg gcc aga gga ggc agg gct gcc ata tgt ggc aag tac ctc ttc aac	17799
Leu Ala Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn	
1695 1700 1705	
tgg gca gta aga aca aag ctc aaa ctc act cca ata gcg gcc gct ggc	17847
Trp Ala Val Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly	
1710 1715 1720	
cag ctg gac ttg tcc ggc tgg ttc acg gct ggc tac agc ggg gga gac	17895
Gln Leu Asp Leu Ser Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp	
1725 1730 1735	
att tat cac agc gtg tct cat gcc cgg ccc cgc tgg atc tgg ttt tgc	17943
Ile Tyr His Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys	
1740 1745 1750 1755	
cta ctc ctg ctt gct gca ggg gta ggc atc tac ctc ctc ccc aac cga	17991
Leu Leu Leu Leu Ala Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg	
1760 1765 1770	
atg agc acg aat cct aaa cct caa aga aag acc aaa cgt aac acc aac	18039
Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn	
1775 1780 1785	
cgg cgg ccg cag gac gtc aag ttc ccg ggt ggc ggt cag atc gtt ggt	18087

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly	
1790 1795 1800	
gga gtt tac ttg ttg ccg cgc agg ggc cct aga ttg ggt gtg cgc gcg	18135
Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala	
1805 1810 1815	
acg aga aag act tcc gag cgg tcg caa cct cga ggt aga cgt cag cct	18183
Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro	
1820 1825 1830 1835	
atc ccc aag gct cgt cgg ccc gag ggc agg acc tgg gct cag ccc ggg	18231
Ile Pro Lys Ala Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly	
1840 1845 1850	
tac cct tgg ccc ctc tat ggc aat gag ggc tgc ggg tgg gcg gga tgg	18279
Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp	
1855 1860 1865	
ctc ctg tct ccc cgt ggc tct cgg cct agc tgg ggc ccc aca gac ccc	18327
Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro	
1870 1875 1880	
cgg cgt agg tcg cgc aat ttg ggt aag gtc atc gat acc ctt acg tgc	18375
Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys	
1885 1890 1895	
ggc ttc gcc gac ctc atg ggg tac ata ccg ctc gtc ggc gcc cct ctt	18423
Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu	
1900 1905 1910 1915	
gga ggc gct gcc agg gcc taatagtcga ctttgttccc actgtacttt	18471
Gly Gly Ala Ala Arg Ala	
1920	
tagctcgtac aaaatacaat atacttttca tttctccgta aacaacatgt tttcccatgt	18531
aatatccttt tctatttttc gttccgttac caactttaca catactttat atagctattc	18591
acttctatac actaaaaaac taagacaatt ttaattttgc tgcctgccat atttcaattt	18651
gttataaatt cctataattt atcctattag tagctaaaaa aagatgaatg tgaatcgaat	18711
cctaagagaa ttggatctga tccacaggac ggggtgtggtc gccatgatcg cgtagtcgat	18771
agtggctcca agtagcgaag cgagcaggac tgggcggcgg ccaaagcggc cggacagtgc	18831
tccgagaacg ggtgcgcata gaaattgcat caacgcatat agcgctagca gcacgccata	18891
gtgactggcg atgctgtcgg aatggacgat atcccgaag aggcccggca gtaccggcat	18951
aaccaagcct atgcctacag catccagggt gacgggtgccg aggatgacga tgagcgcatt	19011
gttagatttc atacacggtg cctgactgcg ttagcaattt aactgtgata aactaccgca	19071
ttaaagcttt ttctttccaa tttttttttt ttcgctcatta taaaaatcat tacgaccgag	19131

attcccggt aataactgat ataattaaat tgaagctcta atttgtgagt ttagtataca 19191
 tgcatttact tataatacag ttttttagtt ttgctggccg catcttctca aatatgcttc 19251
 ccagcctgct tttctgtaac gttcaccttc taccttagca tcccttcctt ttgcaaatag 19311
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 ctggtgaccc aatgctgctc ccttgtcatc taaaccaca cgggtgtca taatcaacca 19431
 atcgtaacct tcatctcttc caccatgtc tctttgagca ataaagccga taacaaaatc 19491
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 cttgcatgac aattctgcta acatcaaaag gcctctaggt tcctttgtta cttcttctgc 19611
 cgctgcttc aaaccgctaa caatacctgg gccaccaca ccgtgtgcat tcgtaatgtc 19671
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 gtcagcaaat tttctgtctt cgaagagtaa aaaattgtac ttggcggata atgcctttag 19791
 cggcttaact gtgccctcca tggaaaaatc agtcaagata tccacatgtg tttttagtaa 19851
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 caatgaagca cacaagtttg tttgcttttc gtgcatgata ttaaatagct tggcagcaac 19971
 aggactagga tgagtagcag cacgttcctt atatgtagct ttcgacatga tttatcttcg 20031
 tttctgcag gtttttgctt tgtgcagttg ggttaagaat actgggcaat ttcatgtttc 20091
 ttcaacta catatgcgta tatataccaa tctaagtctg tgctccttc ttcgttcttc 20151
 cttctgttcg gagattaccg aatcaaaaaa atttcaagga aaccgaaatc aaaaaaaga 20211
 ataaaaaaa aatgatgaat tgaaaagctt atcgat 20247

<210> 19

<211> 1921

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:

pd.delta.NS3NS5.pj.core150

<400> 19

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 1 5 10 15

Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His
 20 25 30

Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
 35 40 45

Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 50 55 60
 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 65 70 75 80
 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
 85 90 95
 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
 100 105 110
 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
 115 120 125
 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
 130 135 140
 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
 145 150 155 160
 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
 165 170 175
 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
 180 185 190
 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
 195 200 205
 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
 210 215 220
 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
 225 230 235 240
 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
 245 250 255
 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
 260 265 270
 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
 275 280 285
 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
 290 295 300
 Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly
 305 310 315 320
 Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr
 325 330 335
 Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr
 340 345 350

Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	Pro	Ser	Trp	Asp	Gln	Met	Trp	355	360	365	
Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	Leu	His	Gly	Pro	Thr	Pro	Leu	370	375	380	
Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	Glu	Ile	Thr	Leu	Thr	His	Pro	385	390	395	400
Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	Ser	Ala	Asp	Leu	Glu	Val	Val	405	410	415	
Thr	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu	Ala	Ala	Leu	Ala	Ala	420	425	430	
Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val	Ile	Val	Gly	Arg	Val	Val	Leu	435	440	445	
Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp	Arg	Glu	Val	Leu	Tyr	Arg	Glu	450	455	460	
Phe	Asp	Glu	Met	Glu	Glu	Cys	Ser	Gln	His	Leu	Pro	Tyr	Ile	Glu	Gln	465	470	475	480
Gly	Met	Met	Leu	Ala	Glu	Gln	Phe	Lys	Gln	Lys	Ala	Leu	Gly	Leu	Leu	485	490	495	
Gln	Thr	Ala	Ser	Arg	Gln	Ala	Glu	Val	Ile	Ala	Pro	Ala	Val	Gln	Thr	500	505	510	
Asn	Trp	Gln	Lys	Leu	Glu	Thr	Phe	Trp	Ala	Lys	His	Met	Trp	Asn	Phe	515	520	525	
Ile	Ser	Gly	Ile	Gln	Tyr	Leu	Ala	Gly	Leu	Ser	Thr	Leu	Pro	Gly	Asn	530	535	540	
Pro	Ala	Ile	Ala	Ser	Leu	Met	Ala	Phe	Thr	Ala	Ala	Val	Thr	Ser	Pro	545	550	555	560
Leu	Thr	Thr	Ser	Gln	Thr	Leu	Leu	Phe	Asn	Ile	Leu	Gly	Gly	Trp	Val	565	570	575	
Ala	Ala	Gln	Leu	Ala	Ala	Pro	Gly	Ala	Ala	Thr	Ala	Phe	Val	Gly	Ala	580	585	590	
Gly	Leu	Ala	Gly	Ala	Ala	Ile	Gly	Ser	Val	Gly	Leu	Gly	Lys	Val	Leu	595	600	605	
Ile	Asp	Ile	Leu	Ala	Gly	Tyr	Gly	Ala	Gly	Val	Ala	Gly	Ala	Leu	Val	610	615	620	
Ala	Phe	Lys	Ile	Met	Ser	Gly	Glu	Val	Pro	Ser	Thr	Glu	Asp	Leu	Val	625	630	635	640
Asn	Leu	Leu	Pro	Ala	Ile	Leu	Ser	Pro	Gly	Ala	Leu	Val	Val	Gly	Val	645	650	655	

Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
 660 665 670
 Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
 675 680 685
 Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val
 690 695 700
 Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu
 705 710 715 720
 His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp
 725 730 735
 Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys
 740 745 750
 Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe
 755 760 765
 Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile
 770 775 780
 Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys
 785 790 795 800
 Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp
 805 810 815
 Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro
 820 825 830
 Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu
 835 840 845
 Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly
 850 855 860
 Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
 865 870 875 880
 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
 885 890 895
 Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His
 900 905 910
 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val
 915 920 925
 Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu
 930 935 940
 Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser
 945 950 955 960

Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr
 965 970 975
 Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu
 980 985 990
 Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn
 995 1000 1005
 Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp
 1010 1015 1020
 Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg
 1025 1030 1035 1040
 Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro
 1045 1050 1055
 Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His
 1060 1065 1070
 Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Pro Arg
 1075 1080 1085
 Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu
 1090 1095 1100
 Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Ser Thr Ser Gly Ile
 1105 1110 1115 1120
 Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys
 1125 1130 1135
 Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu
 1140 1145 1150
 Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val
 1155 1160 1165
 Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr
 1170 1175 1180
 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys
 1185 1190 1195 1200
 Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu
 1205 1210 1215
 Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys Lys Val
 1220 1225 1230
 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu
 1235 1240 1245
 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser
 1250 1255 1260

Val	Glu	Glu	Ala	Cys	Ser	Leu	Thr	Pro	Pro	His	Ser	Ala	Lys	Ser	Lys	1265	1270	1275	1280
Phe	Gly	Tyr	Gly	Ala	Lys	Asp	Val	Arg	Cys	His	Ala	Arg	Lys	Ala	Val	1285	1290	1295	
Thr	His	Ile	Asn	Ser	Val	Trp	Lys	Asp	Leu	Leu	Glu	Asp	Asn	Val	Thr	1300	1305	1310	
Pro	Ile	Asp	Thr	Thr	Ile	Met	Ala	Lys	Asn	Glu	Val	Phe	Cys	Val	Gln	1315	1320	1325	
Pro	Glu	Lys	Gly	Gly	Arg	Lys	Pro	Ala	Arg	Leu	Ile	Val	Phe	Pro	Asp	1330	1335	1340	
Leu	Gly	Val	Arg	Val	Cys	Glu	Lys	Met	Ala	Leu	Tyr	Asp	Val	Val	Thr	1345	1350	1355	1360
Lys	Leu	Pro	Leu	Ala	Val	Met	Gly	Ser	Ser	Tyr	Gly	Phe	Gln	Tyr	Ser	1365	1370	1375	
Pro	Gly	Gln	Arg	Val	Glu	Phe	Leu	Val	Gln	Ala	Trp	Lys	Ser	Lys	Lys	1380	1385	1390	
Thr	Pro	Met	Gly	Phe	Ser	Tyr	Asp	Thr	Arg	Cys	Phe	Asp	Ser	Thr	Val	1395	1400	1405	
Thr	Glu	Ser	Asp	Ile	Arg	Thr	Glu	Glu	Ala	Ile	Tyr	Gln	Cys	Cys	Asp	1410	1415	1420	
Leu	Asp	Pro	Gln	Ala	Arg	Val	Ala	Ile	Lys	Ser	Leu	Thr	Glu	Arg	Leu	1425	1430	1435	1440
Tyr	Val	Gly	Gly	Pro	Leu	Thr	Asn	Ser	Arg	Gly	Glu	Asn	Cys	Gly	Tyr	1445	1450	1455	
Arg	Arg	Cys	Arg	Ala	Ser	Gly	Val	Leu	Thr	Thr	Ser	Cys	Gly	Asn	Thr	1460	1465	1470	
Leu	Thr	Cys	Tyr	Ile	Lys	Ala	Arg	Ala	Ala	Cys	Arg	Ala	Ala	Gly	Leu	1475	1480	1485	
Gln	Asp	Cys	Thr	Met	Leu	Val	Cys	Gly	Asp	Asp	Leu	Val	Val	Ile	Cys	1490	1495	1500	
Glu	Ser	Ala	Gly	Val	Gln	Glu	Asp	Ala	Ala	Ser	Leu	Arg	Ala	Phe	Thr	1505	1510	1515	1520
Glu	Ala	Met	Thr	Arg	Tyr	Ser	Ala	Pro	Pro	Gly	Asp	Pro	Pro	Gln	Pro	1525	1530	1535	
Glu	Tyr	Asp	Leu	Glu	Leu	Ile	Thr	Ser	Cys	Ser	Ser	Asn	Val	Ser	Val	1540	1545	1550	
Ala	His	Asp	Gly	Ala	Gly	Lys	Arg	Val	Tyr	Tyr	Leu	Thr	Arg	Asp	Pro	1555	1560	1565	

Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro Arg Arg Arg Ser Arg
1875 1880 1885

Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys Gly Phe Ala Asp Leu
1890 1895 1900

Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu Gly Gly Ala Ala Arg
1905 1910 1915 1920

Ala